BS_C

Syllabuses and Regulations (4-year curriculum)

2014-15

Faculty of ScienceThe University of Hong Kong

General Information

This booklet includes information on:

BSc Degree curriculum and graduation requirements

> List of courses and descriptions

A full list of Science courses and descriptions include information on course code, title, credit value, contents, semester offered, teaching and learning activities, assessment methods and grade descriptors.

Majors & Minors

Details of the Science Majors and Minors available for students.

> Degree regulations

Rules that cover curriculum requirements and progression in curriculum, selection of courses, assessment, advanced standing, grading system and degree honours classification.

> Teaching weeks

Teaching weeks show the dates of semesters, University holidays, revision and examination periods.

Further Information detailing instructions on the selection of courses, grading, graduation requirements, honours classification, application for advanced standing and exemption, etc, can be found in the *Handbook for BSc Students* available at http://www.scifac.hku.hk/ug/current

Updates on BSc Syllabuses and Regulations can be found at http://webapp.science.hku.hk/sr4/servlet/enquiry

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BSc Degree Curriculum and Graduation Requirements

SECTION I BSc Degree Curriculum and Graduation Requirements

1. A BSc Degree Curriculum

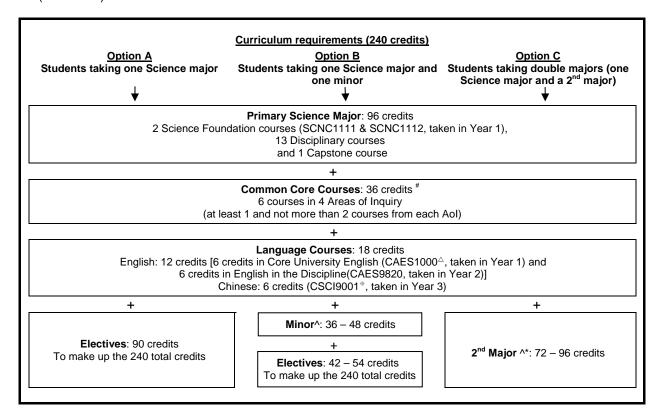
The Faculty of Science offers a number of Science majors leading to the award of a BSc degree.

All students admitted to the 6901 BSc programme under the 4-year curriculum are required to complete at least one Science major out of the 15 Science majors as the primary major for the award of the BSc degree. In addition to the primary Science major, students may take a second major or a minor in a Science or non-Science discipline. Students should note that some non-Science majors and minors may require students to have achieved a minimum academic result before they are allowed to enroll in them.

(a) A typical BSc curriculum for students admitted under the 4-year '2012 curriculum' in 2012-13 or thereafter

To complete the BSc degree curriculum, you have to pass at least 240 credits, equivalent to 40 6-credit courses, normally spread over 4-years of full-time study. A BSc curriculum typically comprises:

- 16 courses for the Science major including 2 Science Foundation courses, Disciplinary courses and capstone courses (96 credits)
- 2 English courses and 1 Chinese course for university language requirements (18 credits)
- 6 common core courses in 4 Areas of Inquiry (36 credits)
- A choice of 15 courses as elective courses, or to fulfill the requirements of a minor or a second major (90 credits)



Notes:

- # Student must select not more than one course from the same Area of Inquiry within one academic year and at least one and not more than two courses from each Area of Inquiry during the whole period of study. Common Core courses should be completed normally within the first three years of study.
- Students who have been admitted to Year 1 in 2014-15 and have achieved the following qualifications shall be exempted from taking CAES1000 Core University English and should take a 6-credit elective course in lieu:

5** on the HKDSE English Language Paper

tested by CAES to be of a native English speaker standard

graduated with an undergraduate degree from an English-medium university

achieved an overall IELTS score of no less than a 7.5 and no less than a 7 on the Reading, Speaking, Listening and Writing Tests

achieved an overall TOEFL Internet Based Test score of no less than 102 and no less than a 27 on the writing and speaking sections and no less than a 24 on the listening and reading sections

achieved a level of no less than 5 on the HL paper or no less than 6 on the SL paper for English Language A: Literature or English Language A: Language and Literature in the International Baccalaureate

achieved an Scholastic Aptitude Test (SAT) essay score of no less than 10 and no less than 700 on the Critical Reading and Writing Tests

achieved a score of no less than 5 on the Advanced Placement English Language and Composition Test or the Literature and Composition Test

achieved an A* on the GCE English A level examination

Exempted students will not be able to enroll CAES1000 via Self Service enrollment.

- [‡] To satisfy the Chinese language enhancement requirement, Students are required to successfully complete the 6-credit Faculty-specific Chinese language enhancement course, except for:
 - (a) Putonghua-speaking students who should take CUND9002 (Practical Chinese and Hong Kong Society) or CUND9003 (Cantonese for Non-Cantonese Speaking Students). They may take the course in Year 1 or 2 if they so wish; and
 - (b) students who have not studied Chinese language during their secondary education or who have not attained the requisite level of competence in the Chinese language to take the Chinese language enhancement course should write to the Faculty Office to apply
 - (i) to take a 6-credit Cantonese or Putonghua language course offered by the School of Chinese especially for international and exchange students; OR
 - (ii) to be exempted from the Chinese language requirement. If exempted, students should take an elective course in lieu.
- ^ Credit requirement for different majors or minors may vary.
- * Students having a second major in Science are allowed to double-count the two Science Foundation Courses. The 12 credits can be made up by selecting any courses.

(b) Common Core Curriculum

The Common Core Curriculum is designed to provide key common learning experience for all HKU students and to broaden their horizons beyond their chosen disciplinary fields of study. It focuses on issues that have been, and continue to be, of deeply profound significance to mankind, the core intellectual skills that all HKU undergraduates should acquire and the core values that they should uphold. The Common Core Curriculum is divided into four Areas of Inquiry (AoIs): (1) Scientific and Technological Literacy; (2) Humanities; (3) Global Issues; (4) China: Culture, State and Society. Students have to pass 36 credits of courses in the Common Core Curriculum, selecting not more than one course from the same Area of Inquiry within one academic year and at least one and not more than two courses from each Area of Inquiry during the whole period of study. Common Core courses should be completed normally within the first three years of the BSc study.

2. BSc Graduation Requirements and Honours Classification (for students admitted under the 4-year '2012 curriculum' in 2012-13 or thereafter)

(a) Award of a BSc degree

To be eligible for the award of the degree of Bachelor of Science, students must fulfill the following requirements:

- (i) Satisfied the requirements in UG5 of the Regulations for First Degree Curricula[#];
- (ii) Passed not fewer than 240 credits, comprising 96 credits of the required courses as prescribed in the major programme of the BSc degree curriculum.
- [#] UG5 specifies that students have to successfully complete:
 - (a) 12 credits in English language enhancement, including 6 credits in Core University English¹ (i.e. CAES1000) and 6 credits in an English in the Discipline course² (i.e. CAES9820 Academic English for Science Students);
 - (b) 6 credits in Chinese language enhancement³ (i.e. CSCI9001 Practical Chinese for Science Students);
 - (c) For 2012 & 2013 cohorts:

36 credits of courses in the Common Core Curriculum, selecting not more than one course from the same Area of Inquiry within one academic year and at least one and not more than two courses from each Area of Inquiry during the whole period of study; and For 2014 cohorts or thereafter:

36 credits of courses in the Common Core Curriculum, comprising at least one and not more than two courses from each Area of Inquiry with not more than one course from the same Area of Inquiry being selected within one academic year except where candidates are required to make up for failed credits; and

(d) a capstone experience as specified in the syllabuses of the degree curriculum.

(b) Honours Classification

Classification of honours are calculated using the cumulative grade point average CGPA as below:

	CGPA range
First Class Honours Second Class Honours Division I Second Class Honours Division II Third Class Honours	3.60 - 4.30 3.00 - 3.59 2.40 - 2.99 1.70 - 2.39
Pass	1.00 – 1.69

Credits granted for advanced standing in recognition of studies completed successfully elsewhere before admission to the University and credits transfer in recognition of studies completed on exchange during candidature at HKU are not included in the calculation of GPA.

Students with 5** on the English examination for the HKDSE

Students whose first language is English

Students who have completed the International Baccalaureate in English

Students with an IELTS score of no less than a 7 on all of the four tests (The IELTS Reading, Writing, Listening and Speaking Tests)

Students with a TOEFL IBT score of 95 or above

Students with a degree already awarded from an English Medium University

- 2 (a) To satisfy the English in the Discipline (ED) requirement, candidates who have passed the ED course for a Major but subsequently change that Major are required to pass the ED course for the new Major, or either of the double Majors finally declared upon graduation irrespective of whether the second Major is offered within or outside of the candidates' home Faculty.
 - (b) Candidates declaring double Majors can, if they fail in the ED course for one of the Majors, either (i) re-take and successfully complete that failed ED course, or (ii) successfully complete the ED course for the other Major, irrespective of whether the Major is offered within or outside of the candidates' home Faculty.
 - (c) Candidates who undertake studies in double Majors or double degrees are not required to take a second ED course but may be advised by the Faculty to do so.

¹ Candidates with the following qualifications shall be exempted from this requirement and should take a 6-credit elective course in lieu, see *Regulation UG6*:

³ Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take a 6-credit elective course in lieu, see *Regulation UG6*.

Capstone Requirements for

Science Students

SECTION II Capstone Requirement for Science Students

Capstone experience is an integral part of the major programme which focuses on integration and application of knowledge and skills gained in the early years of study. The capstone course carries a minimum of 6 credits and students must complete this for fulfillment of the graduation requirements. Capstone course is normally taken in the senior years (year 3 or 4) of study. The earliest that a student is allowed to take a capstone course is their year 3 study. The capstone courses in each Science major may be different but a range of courses (e.g. research project, seminar, field work, internship and capstone project) is offered to suit individual student's needs and interests. The following courses are currently recognized as capstone courses in the different majors:

BS	c - Major	Recognized (Capstone Courses
1.	Biochemistry	1. BIOC3999 2. BIOC4966 3. BIOC4999	Biochemistry internship (6)
2. 3. 4.	Biological Sciences Food & Nutritional Science Molecular Biology & Biotechnology	 BIOL3955 BIOL3999 BIOL4966 BIOL4999 	Directed studies in biological sciences (6) Biological sciences internship (6)
5.	Chemistry	 CHEM399 CHEM491 CHEM491 CHEM496 CHEM496 	 Chemistry literacy and research (6) Capstone experience for chemistry undergraduates: HKUtopia (6) Chemistry internship (6)
6.	Earth System Science	1. EASC4911	
7.	Ecology & Biodiversity	 BIOL3955 BIOL3999 BIOL4911 BIOL4966 BIOL4999 	Directed studies in biological sciences (6) Conservation science in practice (6) Biological sciences internship (6)
8.	Environmental Science	1. ENVS3999 2. ENVS4950 3. ENVS4960 4. ENVS4999	5 Environmental science in practice (6) 6 Environmental science internship (6) 9 Environmental science project (12)
9.	Geology	1. EASC4955	, ,
10.	Mathematics	 MATH399 MATH491 MATH496 MATH496 MATH499 	 Senior mathematics seminar (6) Mathematics capstone project (6) Mathematics internship (6)
11.	Mathematics / Physics	1. MATH399 2. MATH491 3. MATH491 4. MATH496 5. MATH499 6. PHYS3999 7. PHYS4966 8. PHYS4999	O Senior mathematics seminar (6) Mathematics capstone project (6) Mathematics internship (6) Mathematics project (12) Directed studies in physics (6) Physics internship (6) Physics project (12)
	Astronomy Physics	 PHYS3999 PHYS4966 PHYS4999 	6 Physics internship (6) Physics project (12)
	Risk Management Statistics	 STAT3799 STAT4710 STAT4766 STAT4799 	Capstone experience for statistics/risk management undergraduates (6) Statistics internship (6)

Credit Unit Statement of

BSc Degree Curriculum

SECTION III Credit Unit Statement of the BSc Degree Curriculum (4-year)

1. General guideline for contact hours requirement in the BSc Degree Curriculum

- (a) A 6-credit course has around 120-180 total study hours, including contact hours, study time, assignment and assessment.
- (b) About 30% of the total study hours are actual contact hours in the form of a class, e.g. lecture hours.
- (c) A 6-credit course has around 36 to 45 lecture hours.
- (d) For lecture-based courses, normally there will be tutorial/discussion sessions.
- (e) For courses employing a non-lecture or lab-based approach, e.g. field camp, IT-based or project-based courses, students are expected to devote about 120-180 hours for a 6-credit course and 240-360 hours for a 12-credit course.

2. Credit Unit Statement of the BSc Degree Curriculum

The BSc degree curriculum consists of six major types of courses based on the learning activities. The majority of courses in the programmes are 6 credits. Examples of the contact hours requirements for the six categories of courses are described as follows.

(a) Lecture-based courses (6 credits)

Contact hours for 6-credit course: 36 hours of lectures and 12 hours of tutorial/discussion These courses are taught predominantly by lectures and tutorials. Assessment is by a combination of examination (0-80%) and continuous assessment (20-100%). Continuous assessment tasks include written assignments (totaling no more than 8,000 words) such as essays and project reports, and oral presentations. Details of the assessment tasks can be found in the description of individual courses.

(b) Lecture with laboratory component courses (6 credits)

Contact hours for 6-credit course: 24 hours of lectures, 24 hours of laboratory and 6 hours of tutorial

These courses are taught by a combination of lectures and laboratory/practical sessions. Assessment is by a combination of examination (0-70%) and continuous assessment (30-100%). Continuous assessment tasks include written assignments (totaling no more than 8,000 words) such as essays, laboratory reports, and project reports, and oral presentations. Details of the assessment tasks can be found in the description of individual courses.

(c) Laboratory and Workshop courses (6 credits)

Contact hours: 48 hours of laboratory or workshop and 12 hours of tutorial

These courses aim at enriching the student's research skills and encourage group work through hands-on activities in which science research is introduced. Students are expected to spend an additional 100 hours on self-study, preparation work for the laboratory, and writing reports. Continuous assessment tasks (100%) include written assignments (totaling no more than 8,000 words) such as laboratory report for each experiment (normally no more than 10 experiments) and essays. Details of the assessment tasks can be found in the description of individual courses.

(d) Project-based courses (6 and 12 credits)

These courses aim at providing students with an opportunity to pursue their own research interest under the supervision of a teacher. The teacher normally meets with the student weekly to discuss project progress. Assessment task is normally through research reports or a dissertation (totaling no more than 10,000 words for a 6-credit course and 20,000 words for a 12-credit course). Oral presentation will form part of the assessment. Details of the assessment tasks can be found in the description of individual courses.

(e) Field camps (6 credits)

Contact hours: at least 72 hours in the field

These courses aim at giving practical experience in a variety of contexts. Fieldwork may be conducted locally or overseas during reading week or summer. Fieldwork courses have a small number of lecture hours but are predominately practical in nature. Assessment tasks (100%) normally include the following outputs (totaling no more than 8,000 words): field assignments and reports (normally no more than 10 field assignments). Details of the assessment tasks can be found in the description of individual courses.

(f) Internship (6 credits)

Students have to undertake at least 160 hours of internship work

Internships aim to offer students the opportunity to gain work experience related to their major of study. The teacher meets with the student regularly to discuss work progress. Students have to undertake at least 160 hours of internship work arranged formally. Assessment tasks (100%) normally include the following outputs: a written report of no more than 2000 words and feedback from the internship supervisor and an oral presentation on students' internship experience. Details of the assessment tasks can be found in the description of individual courses.

3. The types of courses in the 15 Science Majors and 16 Science Minors are as follows:

		Type of Courses Lecture with laboratory & Workshop works				
Majors/Minors	Lecture- based	laboratory			Field camps	Internship
Actuarial Studies (Minor)	✓	✓	✓	✓		✓
Astronomy (Major & Minor)	✓	✓	✓	✓		✓
Biochemistry (Major & Minor)	✓	✓	✓	✓		✓
Biological Sciences (Major)	✓	✓	✓	✓		✓
Chemistry (Major & Minor)	✓	✓	✓	✓		✓
Computational & Financial Mathematics (Minor)	✓	✓	✓	✓		✓
Earth Sciences (Minor)	✓	✓	✓	✓	✓	✓
Earth System Science (Major)	✓	✓	✓	✓	✓	✓
Ecology & Biodiversity (Major & Minor)	✓	✓	✓	✓	✓	✓
Environmental Science (Major & Minor)	✓	✓	✓	✓	√	✓
Food & Nutritional Science (Major & Minor)	✓	✓	✓	✓		✓
Geology (Major)	✓	✓	✓	✓	✓	✓
Marine Biology (Minor)	✓	✓	✓	✓	✓	✓
Mathematics (Major & Minor)	✓	✓	✓	✓		✓
Mathematics / Physics (Major)	✓	✓	✓	✓		✓
Molecular Biology & Biotechnology (Major & Minor)	✓	✓	✓	✓		✓
Physics (Major & Minor)	✓	✓	✓	✓		✓
Plant Science (Minor)	✓	✓	✓	✓		✓
Risk Management (Major & Minor)	✓	✓	✓	✓		✓
Statistics (Major & Minor)	✓	✓	✓	✓		✓

The above different categories of courses follow the unified Credit Unit Statement of the BSc curriculum.

List of BSc Courses and English and

Chinese language courses on offer in 2014-15 and 2015-16

SECTION IV List of BSc Courses on offer in 2014/15 and 2015/16[^]

Course Code	Title	Credit	Pre-requisite	Availa	able in		in 2014-2015	Quota	Course Coordinator	(The Major/Minor that this cou	urse appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Departmen	t of Biochemistry										
BIOC1600	Perspectives in biochemistry	6	Level 3 or above in HKDSE Biology, Chemistry, or Combined Science with Biology or Chemistry component, or equivalent	Y	Y	1	Dec		Dr J Tanner, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Minor in Biochemistry
BIOC2600	Basic biochemistry	6	Pass in BIOC1600 Perspectives in biochemistry or BIOL1110 From molecules to cells; and Not for students who have passed in BIOL2220 Principles of biochemistry or already enrolled in this course.	Y	Y	1	Dec	300	Prof D K Y Shum, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Major in Molecular Biology & Biotechnology 2012 Minor in Biochemistry 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Biochemistry 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Biochemistry 2014 Minor in Molecular Biology & Biotechnology
BIOC3601	Basic Metabolism	6	Pass in BIOC2600 Basic Biochemistry or BIOL2220 Principles of Biochemistry or MEDE2301 Life sciences I (Biochemistry)	Y	Y	1	Dec	80	Dr N S Wong, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Minor in Biochemistry
BIOC3602	Understanding metabolism diseases	6	Pass in BIOC3601 Basic Metabolism	N	N			40	Dr L Y L Cheng, Biochemistry		
BIOC3604	Essential techniques in biochemistry and molecular biology	6	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of Biochemistry	Y	Y	2	May	60	Dr K M Yao, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Minor in Biochemistry
BIOC3605	Sequence bioinformatics	6	Pass in BIOC2600 Basic Biochemistry or BIOL2220 Principles of Biochemistry or BBMS2003 Human genetics or BBMS2007 Essential molecular biology	Y	Y	2	May	50	Dr B C W Wong, Biochemistry		2012 Major in Biochemistry 2012 Minor in Biochemistry 2013 Major in Biochemistry 2013 Minor in Biochemistry 2014 Major in Biochemistry 2014 Minor in Biochemistry
BIOC3606	Molecular medicine	6	Pass in BIOC2600 Basic Biochemistry or BIOL2220 Principles of Biochemistry	Y	Y	2	May	50	Prof D Y Jin, Biochemistry		2012 Major in Biochemistry 2012 Minor in Biochemistry 2013 Major in Biochemistry 2013 Minor in Biochemistry 2014 Major in Biochemistry 2014 Minor in Biochemistry
BIOC3999	Directed studies in biochemistry		Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Biochemistry Major including BIOC2600 Basic biochemistry and BIOL3401 Molecular biology. This capstone course is for Biochemistry Major students only.	Y	Y	2, S	No exam	36	Dr J D Huang, Biochemistry		
BIOC4610	Advanced biochemistry	6	Pass in BIOC3601 Metabolism or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell technology or BIOL3404 Protein structure and function	N	Y			50	Dr K M Yao, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Minor in Biochemistry
BIOC4611	Advanced biochemistry II	6	Pass in BIOC3601 Metabolism; and BIOL3404 Protein Structure and Function or CHEM2441 Organic Chemistry I; and Pass in BIOC4610 Advanced Biochemistry I, or already enrolled in this course	N	N			50	Dr D Chan, Biochemistry		

[^] Availability of courses in 2015-2016 is subject to change.

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this co	urse appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
-	t of Biochemistry (Cont'd)										
BIOC4612	Molecular biology of the gene		Pass in BIOC3601 Metabolism or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell technology or BIOL3404 Protein structure and function	N	Y				Prof K S E Cheah, Biochemistry		2012 Major in Biochemistry 2012 Minor in Biochemistry 2013 Major in Biochemistry 2013 Minor in Biochemistry 2014 Major in Biochemistry 2014 Minor in Biochemistry
BIOC4613	Advanced techniques in biochemistry & molecular biology	6	Pass in BIOC3604 Essential techniques in biochemistry and molecular biology	Y	Y	1	Dec	50	Dr D Chan, Biochemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry	2012 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Minor in Biochemistry
BIOC4966	Biochemistry internship	6	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Biochemistry Major including BIOC3604 Essential techniques in biochemistry & molecular biology. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Biochemistry Major students only.	N	Y			20	Dr J D Huang, Biochemistry		
BIOC4999	Biochemistry project	12	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Biochemistry Major including 4 of the following 5 courses: BIOL3401 Molecular Biology, BIOC3601 Basic Metabolism, and BIOC3604 Essential techniques in biochemistry and molecular biology; and BIOC4610 Advanced biochemistry; and BIOC4613 Advanced techniques in biochemistry & molecular biology, or already enrolled in this course: This capstone course is for Biochemistry Major students only.	N	Y			25	Dr N S Wong, Biochemistry		
BIOL3404	Protein structure and function	6	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry	Y	Y	2	May	160	Dr C M Qian, Biochemistry		2012 Major in Biochemistry 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Biochemistry 2013 Major in Biochemistry 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Biochemistry 2014 Major in Biochemistry 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Biochemistry 2014 Minor in Biochemistry
School of I	Biological Sciences										
BIOL1110	From molecules to cells	6	NIL	Y	Y	1, 2	Dec, May	169	Prof B K C Chow, Biological Sciences	2012 Major in Biochemistry 2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Major in Food & Nutritional Science 2012 Major in Molecular Biology & Biotechnology 2013 Major in Biochemistry 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2013 Major in Food & Nutritional Science 2013 Major in Molecular Biology & Biotechnology 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Major in Food & Nutritional Science 2014 Major in Molecular Biology & Biotechnology	2012 Minor in Biochemistry 2012 Minor in Food & Nutritional Science 2012 Minor in Molecular Biology & Biotechnology 2012 Minor in Plant Science 2013 Minor in Biochemistry 2013 Minor in Food & Nutritional Science 2013 Minor in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Minor in Biochemistry 2014 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Plant Science

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015			(The Major/Minor that this course appears as a required course) Major / Minor		
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)	
School of I	Biological Sciences (Cont'd))										
BIOL1111	Introductory microbiology		NIL	Y	Y	1	Dec		Dr V Dvornyk, Biological Sciences	2012 Major in Biological Sciences 2013 Major in Biological Sciences 2014 Major in Biological Sciences		
BIOL1201	Introduction to food and nutrition	6	NIL	Y	Y	1	Dec	110	Prof N P Shah, Biological Sciences	2012 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Minor in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science	
BIOL1309	Evolutionary diversity		NIL	Y	Y	2	May		Prof R M K Saunders, Biological Sciences	2012 Major in Biological Sciences 2012 Major in Earth System Science 2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Biological Sciences 2013 Major in Earth System Science 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Biological Sciences 2014 Major in Earth System Science 2014 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity	2012 Minor in Marine Biology 2012 Minor in Plant Science 2013 Minor in Marine Biology 2013 Minor in Plant Science 2014 Minor in Marine Biology 2014 Minor in Plant Science	
BIOL1501	Bioethics	6	NIL	N	Υ			40	Prof F C C Leung,			
BIOL1502	The gene	6	NIL Not for students with level 3 or above in HKDSE Biology or Combined Science	N	Y			50	Biological Sciences Prof F C C Leung, Biological Sciences			
BIOL2102	Biostatistics	6	with Biology component or equivalent. Pass in BIOC1600 Perspectives in biochemistry or BIOL1110 From molecules to cells or BIOL2306 Ecology and evolution or ENVS1301 Environmental life science or ENVS2002 Environmental data analysis	Y	Y	2	May	135	Dr G Panagiotou, Biological Sciences	2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Major in Food & Nutritional Science 2012 Major in Molecular Biology & Biotechnology 2013 Major in Biological Sciences 2013 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Major in Molecular Biology & Biotechnology 2014 Major in Biological Sciences 2014 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Major in Environmental Science 2012 Minor in Environmental Science 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Environmental Science 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Environmental Science 2014 Minor in Molecular Biology & Biotechnology	
	Biological sciences laboratory course	6	Pass in BIOL1110 From molecules to cells	Y	Y	1, 2	Dec, May		Dr W Y Lui, Biological Sciences	2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Major in Food & Nutritional Science 2012 Major in Molecular Biology & Biotechnology 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2013 Major in Food & Nutritional Science 2013 Major in Molecular Biology & Biotechnology 2014 Major in Biological Sciences 2014 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Minor in Molecular Biology & Biotechnology 2012 Minor in Plant Science 2013 Minor in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Plant Science	
BIOL2220	Principles of biochemistry	6	Pass in BIOL1110 From molecules to cells; and Not for students who have passed in BIOC2600 Basic biochemistry or have already enrolled in this course.	Y	Y	1	Dec	100	Dr C S C Lo, Biological Sciences	2012 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Major in Molecular Biology & Biotechnology 2012 Minor in Food & Nutritional Science 2012 Minor in Molecular Biology & Biotechnology 2012 Minor in Plant Science 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Food & Nutritional Science 2013 Minor in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Food & Nutritional Science 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Plant Science	

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	lialarias Calanas					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont'd)						_			1	
	Ecology and evolution		Pass in BIOL1309 Evolutionary diversity or BIOL1110 From molecules to cells or ENVS1301 Environmental life science or ENVS1401 Introduction to environmental science		Y	1	Dec		Prof D Dudgeon, Biological Sciences	2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Major in Food & Nutritional Science 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Ecology & Biodiversity 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2013 Major in Food & Nutritional Science 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Ecology & Biodiversity 2014 Major in Biological Sciences 2014 Major in Ecology & Biodiversity 2014 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Major in Food & Biodiversity 2014 Major in Food & Biodiversity 2014 Major in Ecology & Biodiversity	2012 Major in Environmental Science 2012 Minor in Marine Biology 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Environmental Science 2013 Minor in Marine Biology 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Environmental Science 2014 Minor in Marine Biology 2014 Minor in Molecular Biology 2014 Minor in Molecular Biology & Biotechnology
BIOL3105	Animal physiology and environmental adaptation	6	Pass in BIOL2103 Biological sciences laboratory course or BIOL2220 Principles of biochemistry or BIOL2102 Biostatistics or BIOL2306 Ecology & evolution	N	Y			40	Prof A O L Wong, Biological Sciences		2012 Major in Biological Sciences 2013 Major in Biological Sciences 2014 Major in Biological Sciences
BIOL3107	Plant physiology	6	Pass in BIOL2103 Biological sciences laboratory course	Y	Y	1	Dec	30	Dr W K Yip, Biological Sciences		2012 Major in Biological Sciences 2012 Minor in Plant Science 2013 Major in Biological Sciences 2013 Minor in Plant Science 2014 Major in Biological Sciences 2014 Minor in Plant Science
BIOL3108	Microbial physiology	6	Pass in BIOL2103 Biological sciences laboratory course	Y	Y	1	Dec	50	Dr A Yan, Biological Sciences		2012 Major in Biological Sciences 2013 Major in Biological Sciences 2014 Major in Biological Sciences
BIOL3109	Environmental microbiology	6	Pass in BIOL2103 Biological sciences laboratory course	Y	Y	2	May	40	Dr J D Gu, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2014 Major in Biological Sciences 2014 Major in Ecology & Biodiversity
BIOL3110	Environmental toxicology	6	Pass in BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution or CHEM3141 Environmental chemistry	Y	Y	1	Dec	60	Dr J D Gu, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Biological Sciences 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Biological Sciences 2014 Major in Environmental Science 2014 Major in Environmental Science
BIOL3201	Food chemistry	6	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry	Y	Y	2	May	60	Dr J C Y Lee, Biological Sciences	2012 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Minor in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science
BIOL3202	Nutritional biochemistry	6	Pass in BIOL2220 Principles of biochemistry or BIOC2600 Basic biochemistry	Y	Y	1	Dec	100	Dr E T S Li, Biological Sciences	2012 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Major in Biochemistry 2012 Minor in Biochemistry 2012 Minor in Food & Nutritional Science 2013 Major in Biochemistry 2013 Minor in Biochemistry 2013 Minor in Food & Nutritional Science 2014 Major in Biochemistry 2014 Minor in Biochemistry 2014 Minor in Food & Nutritional Science
BIOL3203	Food microbiology	6	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry	Y	Y	2	May	60	Dr H S El-Nezami, Biological Sciences	2012 Major in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science	2012 Minor in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science

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Cabaal of F	Piological Science					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont'd)										
BIOL3204	Nutrition and the life cycle		Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry or BIOL3202 Nutritional biochemistry	Y	Y	2	May	70	Dr E T S Li, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL3205	Human physiology		Pass in BIOL2103 Biological sciences laboratory course	Y	Y	1	Dec	120	Dr W Y Lui, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Biological Sciences 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Biological Sciences 2014 Major in Food & Nutritional Science 2014 Minor in Food & Nutritional Science
BIOL3206	Clinical nutrition		Pass in BIOL3202 Nutritional biochemistry or BIOL3203 Food microbiology or BIOL3204 Nutrition and the life cycle or BIOL3205 Human physiology	Y	Y	2	May	70	Dr J M F Wan, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL3207	Food and nutritional toxicology		Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry or BIOL3205 Human physiology	Y	Y	2	Мау	80	Dr H S El-Nezami, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL3208	Food safety and quality management		Pass in BIOL3201 Food chemistry or BIOL3203 Food microbiology	Y	Y	1	Dec	40	Prof H Corke, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL3209	Food and nutrient analysis	6	Pass in BIOL3201 Food chemistry	Y	Y	1	Dec	70	Dr M F Wang, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL3210	Grain production and utilization	6	Pass in any level 2 BIOL course	Y	Y	1	Dec	40	Prof H Corke, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2012 Minor in Plant Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2013 Minor in Plant Science 2014 Major in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science
BIOL3211	Nutrigenomics		Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry	Y	Y	2	May	40	Dr K C Tan-Un, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo

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						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont				_						
BIOL3301	Marine biology	6	Pass in BIOL2306 Ecology and evolution or ENVS2002 Environmental data analysis	Y	Y	2	May	40	Dr M Yasuhara, Biological Sciences	2012 Minor in Marine Biology 2013 Minor in Marine Biology 2014 Minor in Marine Biology	2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Biological Sciences 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity
BIOL3302	Systematics and phylogenetics	6	Pass in BIOL1309 Evolutionary diversity and any level 2 BIOL course	Y	Y	1	Dec	60	Prof R M K Saunders, Biological Sciences	2012 Major in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity	2012 Major in Biological Sciences 2012 Minor in Ecology & Biodiversity 2013 Major in Biological Sciences 2013 Minor in Ecology & Biodiversity 2014 Major in Biological Sciences 2014 Minor in Ecology & Biodiversity
BIOL3303	Conservation ecology	6	Pass in BIOL2306 Ecology and evolution	Y	Y	2	May	40	Dr T C Bonebrake, Biological Sciences	2012 Major in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity	2012 Major in Biological Sciences 2012 Major in Environmental Science 2012 Minor in Ecology & Biodiversity 2012 Minor in Environmental Science 2012 Minor in Marine Biology 2013 Major in Biological Sciences 2013 Major in Environmental Science 2013 Minor in Ecology & Biodiversity 2013 Minor in Environmental Science 2013 Minor in Biological Science 2013 Minor in Environmental Science 2014 Major in Biological Sciences 2014 Major in Biological Sciences 2014 Minor in Ecology & Biodiversity 2014 Minor in Environmental Science 2014 Minor in Environmental Science
BIOL3313	Freshwater ecology	6	Pass in BIOL2102 Biostatistics and BIOL2306 Ecology and evolution	Y	Y	1	Dec	30	Prof D Dudgeon, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity
BIOL3314	Plant structure and evolution	6	Pass in BIOL1309 Evolutionary diversity and any level 2 BIOL course	Y	Y	2	May	30	Prof R M K Saunders, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2012 Minor in Plant Science 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2013 Minor in Plant Science 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Plant Science
	Experimental intertidal ecology		Pass in BIOL2102 Biostatistics or BIOL3301 Marine biology	Y	Y	2	May		Prof G A Williams, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2012 Minor in Marine Biology 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2013 Minor in Marine Biology 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Marine Biology
BIOL3319	Terrestrial ecology	6	Pass in BIOL3303 Conservation ecology	Y	Y	2	May	30	Dr B Guenard, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity

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						2014-2015 0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
School of E	Biological Sciences (Cont'd))									
	The biology of marine mammals		Pass in BIOL2306 Ecology and evolution		Y				Dr L Karczmarski, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2012 Minor in Marine Biology 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2013 Minor in Marine Biology 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Marine Biology
BIOL3401	Molecular biology	6	Pass in BIOL2103 Biological sciences laboratory course or BIOL2220 Principles of biochemistry or BIOC2600 Basic biochemistry	Y	Y	1	Dec	130	Prof B K C Chow, Biological Sciences	2012 Major in Biochemistry 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Biochemistry 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Biochemistry 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology	2012 Major in Biological Sciences 2012 Minor in Biochemistry 2013 Major in Biological Sciences 2013 Minor in Biochemistry 2014 Major in Biological Sciences 2014 Minor in Biochemistry
BIOL3402	Cell biology and cell technology	6	Pass in BIOL2103 Biological sciences laboratory course or BIOL2220 Principles of biochemistry or BIOC2600 Basic biochemistry	Y	Y	1	Dec	120	Prof A S T Wong, Biological Sciences	2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology	2012 Major in Biochemistry 2012 Major in Biological Sciences 2012 Minor in Biochemistry 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Biochemistry 2013 Major in Biological Sciences 2013 Minor in Biochemistry 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Biochemistry 2014 Major in Biological Sciences 2014 Minor in Biological Sciences 2014 Minor in Biochemistry 2014 Minor in Biochemistry
BIOL3403	Immunology	6	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry or BIOL2103 Biological sciences laboratory course	Y	Y	2	May	100	Dr B L Lim, Biological Sciences		2012 Major in Biochemistry 2012 Major in Biological Sciences 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2013 Major in Biochemistry 2013 Major in Biological Sciences 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Biochemistry 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Minor in Biochemistry 2014 Minor in Biochemistry 2014 Minor in Biochemistry
BIOL3405	Molecular microbiology	6	Pass in BIOL2103 Biological sciences laboratory course	Y	Y	2	May	30	Dr J S H Tsang, Biological Sciences		2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology
BIOL3406	Reproduction and reproductive biotechnology	6	Pass in BIOL2103 Biological sciences laboratory course or BIOL2220 Principles of biochemistry or BIOL2102 Biostatistics or BIOL2306 Ecology & evolution	Y	Y	1	Dec	30	Prof A O L Wong, Biological Sciences		2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this cou	rse appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont'd)										
BIOL3408		6	Pass in BIOL2103 Biological sciences laboratory course	Y	Y	1	Dec		Dr C S C Lo, Biological Sciences		2012 Major in Biochemistry 2012 Major in Biological Sciences 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Plant Science 2013 Major in Biochemistry 2013 Major in Biochemistry 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Plant Science
BIOL3409	Business aspects of biotechnology	6	Pass in any level 2 BIOL or BIOC course	Y	Y	2	No exam	40	Dr W B L Lim, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Biological Sciences 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Biological Sciences 2014 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology
BIOL3501	Evolution	6	Pass in BIOL2306 Ecology and evolution	Υ	Y	1	Dec	50	Dr M Sun, Biological Sciences		
BIOL3502	Conservation genetics	6	Pass in BIOL2306 Ecology and evolution or BIOL3303 Conservation ecology or BIOL3408 Genetics	N	Y			50	Dr M Sun, Biological Sciences		
BIOL3503	Endocrinology: human	6	Pass in BIOL2103 Biological sciences	N	Υ			120	Prof B K C Chow, Biological Sciences		
BIOL3505	physiology II Larval life science: an	6	Passed in at least 24 credits of	N	N			30	Dr T Vengatesen,		
BIOL3951	interdisciplinary approach Ecology & biodiversity field course		BIOL2XXX level courses Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Ecoloov & Biodiversity Maior. Students are expected to have completed year 2 study satisfactorily. This capstone course is for Ecology & Biodiversity Major students only.	Y	Y	2	No exam	22	Biological Sciences Dr L Karczmarski, Biological Sciences		
BIOL3991	Directed studies in ecology & biodiversity	6	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Ecology & Biodiversity Major. This capstone course is for Ecology & Biodiversity Major students only.	N	Y			50	Dr M Sun, Biological Sciences		
BIOL3992	Directed studies in food & nutritional science	6	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Food & Nutritional Science Major. This capstone course is for Food & Nutritional Science Major students only.	N	Y			50	Dr M Sun, Biological Sciences		
BIOL3993	Directed studies in Molecular biology & biotechnology	6	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Molecular Biology & Biotechnology Major. This capstone course is for Molecular Biology & Biotechnology Major students only.	N	Y			50	Dr M Sun, Biological Sciences		

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School of I	Biological Sciences (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Directed studies in biological sciences		Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Biological Sciences Major. This capstone course is for Biological Sciences Major students only.	Y	Y	0	No exam	50	Dr M Sun, Biological Sciences		
	Public health nutrition		Pass in BIOL3201 Food chemistry or BIOL3202 Nutritional biochemistry	Y	Y	2	May		Dr J M F Wan, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
	Diet, brain function and behavior		Pass in BIOL3204 Nutrition and the life cycle or already enrolled in this course	N	Y				Dr E T S Li, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL4205	Food processing and engineering	6	Pass in BIOL3201 Food chemistry	Y	Y	1	Dec	60	Dr J C Y Lee, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL4207	Meat and dairy sciences	6	Pass in BIOL3201 Food chemistry	Y	Y	2	May	50	Prof N P Shah, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL4209	Functional foods	6	Pass in BIOL3201 Food chemistry or BIOL3202 Nutritional biochemistry	Y	Y	1	Dec	40	Dr M F Wang, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2012 Minor in Plant Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2013 Minor in Plant Science 2014 Major in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Plant Science
BIOL4210	Food product development	6	Pass in BIOL3203 Food microbiology or BIOL4205 Food processing and engineering	Y	Y	1	Dec	40	Dr M F Wang, Biological Sciences		2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Minor in Fo
BIOL4301	Fish and fisheries	6	Pass in BIOL3301 Marine biology or BIOL3303 Conservation ecology	Y	Y	2	May	30	Prof Y J Sadovy, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2012 Minor in Marine Biology 2013 Major in Biological Sciences 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2013 Minor in Marine Biology 2014 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Marine Biology

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this co	urse appears as a required course)
Cabaal af I	lialarias Calanas					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont'd)		Deep in DIOI 2402 Dialogical esignada	V	Y	2	Mari	20	Prof R S S Wu.	1	2042 Major in Foology & Diadiversity
	Environmental impact assessment		Pass in BIOL2103 Biological sciences laboratory course or BIOL2306 Ecology and Evolution; and Any BIOL3XXX course or ENVS3004 Environment, society and economics	Y		2	May	30	Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Major in Environmental Science 2012 Minor in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2013 Major in Environmental Science 2013 Minor in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity
BIOL4303	Animal behaviour		Pass in BIOL2306 Ecology and evolution; and pass in one of the following courses: BIOL3301 Marine biology or BIOL3313 Freshwater ecology or BIOL3319 Terrestrial ecology or BIOL3320 The biology of marine mammals	Y	N	1	Dec		Dr L Karczmarski, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Minor in Ecology & Biodiversity 2013 Major in Ecology & Biodiversity 2013 Minor in Ecology & Biodiversity 2014 Major in Ecology & Biodiversity 2014 Minor in Ecology & Biodiversity
BIOL4401	Medical microbiology and applied immunology	6	Pass in BIOL3403 Immunology	Y	Y	2	May	40	Dr W Y Lui, Biological Sciences		2012 Major in Biological Sciences 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Biological Sciences 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Biological Sciences 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology
BIOL4402	Microbial biotechnology	6	Pass in BIOL3401 Molecular biology	Y	Y	2	May	30	Dr J S H Tsang, Biological Sciences	2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology	2012 Minor in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology
BIOL4409	General virology	6	Pass in BIOL3401 Molecular biology or BIOL3403 Immunology	Y	Y	1	Dec	30	Dr B L Lim, Biological Sciences		2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology
BIOL4411	Plant and food biotechnology	6	Pass in BIOL3401 Molecular biology or BIOL3211 Nutrigenomics	N	Y			80	Prof M L Chye, Biological Sciences	2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology	2012 Major in Food & Nutritional Science 2012 Minor in Food & Nutritional Science 2012 Minor in Molecular Biology & Biotechnology 2012 Minor in Plant Science 2013 Major in Food & Nutritional Science 2013 Minor in Food & Nutritional Science 2013 Minor in Molecular Biology & Biotechnology 2013 Minor in Plant Science 2014 Major in Food & Nutritional Science 2014 Minor in Food & Nutritional Science 2014 Minor in Molecular Biology & Biotechnology 2014 Minor in Plant Science
BIOL4415	Healthcare biotechnology	6	Pass in BIOL3401 Molecular biology	Y	Y	2	May	70	Prof A S T Wong, Biological Sciences	2012 Major in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology	2012 Minor in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology
BIOL4416	Stem cells and regenerative biology	6	Pass in BIOL3211 Nutrigenomics or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell technology or BIOL3403 Immunology or BIOL3404 Protein structure and function or BIOL3408 Genetics or BIOC3601 Metabolism or BIOC3604 Essential techniques in biochemistry and molecular biology.	Y	N	2	May	40	Dr K W Y Yuen, Biological Sciences	,	2012 Major in Molecular Biology & Biotechnology 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Molecular Biology & Biotechnology

Course Code	Title	Credit		Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this cou	rse appears as a required course) Minor
Sahaal of E	Biological Sciences (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	'Omics' and systems biology		Pass in BIOL3211 Nutrigenomics or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell technology or BIOL3404 Protein structure and function or BIOL3404 Protein structure and function or BIOL3408 Genetics or BIOC3601 Metabolism or BIOC3604 Essential techniques in biochemistry and molecular biology.	Y	Y	2	May	40	Dr J W Zhang, Biological Sciences		2012 Major in Biochemistry 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Biochemistry 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Biochemistry 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Biochemistry 2013 Minor in Biochemistry 2014 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Biochemistry 2014 Minor in Biochemistry
BIOL4501	Molecular phylogenetics and evolution	6	Pass in BIOL3401 Molecular biology or BIOL3408 Genetics	N	Y			25	Dr V Dvornyk, Biological Sciences		
BIOL4861	Ecology & biodiversity internship	6	Students are expected to have satisfactorily completed their Year 3 study. This course is for Ecology & Biodiversity Major students only.	Y	Y	2, S	No exam		Dr T Vengatesen, Biological Sciences		
BIOL4911	Conservation science in practice	6	level biological sciences courses (BIOL3XXX or BIOL4XXX) including BIOL3303 Conservation ecology. This capstone course is for Ecology & Biodiversity Major students only.	Y	Y	2	Мау	15	Prof Y J Sadovy, Biological Sciences		
BIOL4962	Food & nutritional science internship	6	Pass in at least 24 credits of advanced level biological sciences courses courses (BIOL3XXX or BIOL4XXX) in the Food & Nutritional Science Major. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Food & Nutritional Science Major students only.	Y	Y	2, S	No exam		Dr J C Y Lee, Biological Sciences		
BIOL4963	Molecular biology & biotechnology internship	6	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Molecular Biology & Biotechnology Major. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Molecular Biology & Biotechnology Major students only.	Y	Y	2, S	No exam		Dr T Vengatesen, Biological Sciences		
BIOL4964	Biological sciences internship	6	Drilly. Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Biological Sciences Major. Students are expected to have satisfactorily completed their Year 3 study. This captsone course is for Biological Sciences Major students only.	Y	Y	2, S	No exam		Dr T Vengatesen, Biological Sciences		

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this co	ourse appears as a required course) r / Minor
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Biological Sciences (Cont'd)				- V				D (O A MAPIE		
	Ecology & biodiversity project		Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Ecology & Biodiversity Major; and Cumulative GPA of 3.0 or above. Students are not permitted to take both BIOL3991 and BIOL4991. This capstone course is for Ecology & Biodiversity Major students only.	N	Y			30	Prof G A Williams, Biological Sciences		
BIOL4992	Food & nutritional science project		Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Food & Nutritional Science Major; and Cumulative GPA of 3.0 or above. This capstone course is for Food & Nutritional Science Major students only.	N	Y			30	Prof G A Williams, Biological Sciences		
BIOL4993	Molecular biology & biotechnology project		Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Molecular Biology & Biotechnology Major; and Cumulative GPA of 3.0 or above. This capstone course is for Molecular Biology & Biotechnology Major students only.	N	Y			30	Prof G A Williams, Biological Sciences		
BIOL4994	Biological sciences project		Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Biological Sciences Major; and Cumulative GPA of 3.0 or above. This capstone course is for Biological Sciences Major students only.	N	Y			30	Prof G A Williams, Biological Sciences		
ENVS1301	Environmental life science		NIL	Y	Y	1	Dec	40	Dr T Vengatesen, Biological Sciences		2012 Major in Environmental Science 2012 Minor in Environmental Science 2012 Minor in Marine Biology 2013 Major in Environmental Science 2013 Minor in Environmental Science 2013 Minor in Marine Biology 2014 Major in Environmental Science 2014 Minor in Environmental Science 2014 Minor in Environmental Science 2014 Minor in Marine Biology
ENVS2001	Environmental field and lab course		Pass in ENVS1301 Environmental life science or ENVS1401 Introduction to environmental science or EASC1401 Blue planet or BIOL1309 Evolutionary diversity	Y	Y	1	No exam	30	Dr D M Baker, Biological Sciences	2013 Major in Environmental Science 2014 Major in Environmental Science	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Minor in Environmental Science 2014 Minor in Environmental Science
ENVS2002	Environmental data analysis	6	Pass in ENVS1301 Environmental life science or ENVS1401 Introduction to environmental science or EASC1401 Blue planet or BIOL1309 Evolutionary diversity	Y	Y	2	May	50	Dr T C Bonebrake, Biological Sciences	2013 Major in Ecology & Biodiversity 2013 Major in Envirohnmental Science 2014 Major in Ecology & Biodiversity 2014 Major in Environmental Science	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Minor in Environmental Science 2014 Minor in Environmental Science
ENVS3019	Urban ecology		Pass in ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis or BIOL2306 Ecology and evolution	N	Y			50	Dr T C Bonebrake, Biological Sciences		2012 Major in Ecology & Biodiversity 2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Ecology & Biodiversity 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Ecology & Biodiversity 2014 Major in Environmental Science 2014 Minor in Environmental Science

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015	Quota	Course Coordinator	(The Major/Minor that this cour Major /	se appears as a required course) Minor
Cahaal of D	interioral Sciences					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	iological Sciences (Cont'd) Global change ecology		Pass in ENVS2001 Environmental field	Y	N	2	May	50	Dr C Dingle,		2012 Major in Environmental Science
			and lab course or ENVS2002 Environmental data analysis or BIOL2306 Ecology and evolution			2	iviay		Biological Sciences		2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
	Environmental remediation		Pass in BIOL3109 Environmental microbiology or BIOL3110 Environmental toxicology or BIOL3401 Molecular biology or ENVS3042 Pollution	N	Y				Dr J D Gu, Biological Sciences		2012 Major in Environmental Science 2012 Major in Molecular Biology & Biotechnology 2012 Minor in Environmental Science 2012 Minor in Molecular Biology & Biotechnology 2013 Major in Environmental Science 2013 Major in Molecular Biology & Biotechnology 2013 Minor in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Major in Molecular Biology & Biotechnology 2014 Minor in Environmental Science 2014 Minor in Environmental Science 2014 Minor in Environmental Science
	Environmental science in practice		Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major. Students are expected to have satisfactorily completed their Year 3 study in Environmental Science Major. This capstone course is for Environmental Science Major students only.	N	Y			18	Dr M Yasuhara, Biological Sciences		
	Environmental science internship	6	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major. Students are expected to have satisfactorily completed their Year 3 study in Environmental Science Major. This capstone course is for Environmental Science Major students only.	Y	Y	2, \$	No exam		Dr C Dingle, Biological Sciences		
Centre for A	pplied English Studies								· · · · · · · · · · · · · · · · · · ·		'
CAES1000	Core University English	6	NIL	Y	Y	1, 2	Dec, May		Dr Y M Chan (1st sem); Dr N S N Fong (2nd sem), English		
	Academic English for science students	6	NIL	Υ	Υ	1, 2	No exam		Mr S Boynton, English		
•	of Chemistry										
CHEM1041	Foundations of chemistry		Level 3 or above in HKDSE Combined Science with Chemistry component or Integrated Science, or equivalent. Students without such background but keen on taking this foundation chemistry course may approach the course coordinator for consideration. Not for students with Level 3 or above in HKDSE Chemistry.	Y	Y	1	Dec	150	Dr A P L Tong, Chemistry		

Course Code	Title	Credi	t Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that thi	s course appears as a required course)
Denartment	t of Chemistry (Cont'd) General chemistry 6					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
		6	Level 3 or above in HKDSE Chemistry or equivalent; students without Level 3 or above in HKDSE Chemistry but having a pass in CHEM1041 Foundations of chemistry may be allowed to take this course.	Y	Y	1, 2	Dec, May	260	Dr A P L Tong, Chemistry	2012 Major in Biochemistry 2012 Major in Chemistry 2012 Minor in Chemistry 2013 Major in Biochemistry 2013 Major in Chemistry 2013 Minor in Chemistry 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Chemistry 2014 Minor in Chemistry	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Major in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
CHEM2041	Principles of chemistry	6	Pass in CHEM1042 General chemistry; and Not for students who have passed in CHEM2341 Inorganic chemistry I or have already enrolled in this course; and Not for students who have passed in CHEM2441 Organic chemistry I or have already enrolled in this course; and Not for students who have passed in CHEM2541 Physical chemistry I, or have already enrolled in this course; and Not for Chemistry major students.	N	Y			280	Dr I K Chu, Chemistry		2012 Major in Environmental Science 2012 Minor in Chemistry 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Chemistry 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Chemistry 2014 Major in Environmental Science
CHEM2042	Principles of chemistry for pharmacy students	6	Pass in CHEM1042 General chemistry; and Not for students who have passed in CHEM2041 Prinicples of chemistry, or already enrolled in this course. (This course is for BPharm students only)	N	N			30	Dr A M Y Yuen, Chemistry		
CHEM2241	Analytical chemistry I	6	Pass in CHEM1042 General chemistry	Y	Y	1, 2	Dec, May	100	Dr W T Chan, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	2012 Minor in Chemistry 2013 Minor in Chemistry 2014 Minor in Chemistry
CHEM2341	Inorganic chemistry I	6	Pass in CHEM1042 General chemistry; and Not for students who have passed in CHEM2041 Principles of chemistry or have already enrolled in this course.	Y	Y	1, 2	Dec, May	120	Prof V W W Yam, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	2012 Minor in Chemistry 2013 Minor in Chemistry 2014 Minor in Chemistry
CHEM2441	Organic chemistry I	6	Pass in CHEM1042 General chemistry; and Not for students who have passed in CHEM2041 Principles of chemistry or CHEM2442 Fundamental of organic chemistry or have already enrolled in this course.	Y	Y	1, 2	Dec, May	130	Prof P Chiu, Chemistry	2012 Major in Biochemistry 2012 Major in Chemistry 2013 Major in Biochemistry 2013 Major in Chemistry 2014 Major in Biochemistry 2014 Major in Chemistry	2012 Minor in Chemistry 2013 Minor in Chemistry 2014 Minor in Chemistry
CHEM2442	Fundamentals of organic chemistry	6	Pass in CHEM1042 General chemistry; and Not for students who have passed CHEM2441 Organic chemistry I or have already enrolled in this course.	Y	Y	1	Dec	120	Dr P H Toy, Chemistry		2012 Minor in Chemistry 2013 Minor in Chemistry 2014 Minor in Chemistry
CHEM2443	Fundamentals of organic chemistry for pharmacy students	6	Pass in CHEM1042 General chemistry; and Not for students who have passed CHEM2442 Fundamentals of organic chemistry, or already enrolled in this course. (This course is for BPharm students only)	Y	Y	1	Dec	60	Dr P H Toy, Chemistry		

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this co Maior	urse appears as a required course) / Minor
J enartment	of Chemistry (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	Physical chemistry I		Pass in CHEM1042 General chemistry; and Not for students who passed in CHEM2041 Principles of chemistry or have already enrolled in this course.	Y	Y	1, 2	Dec, May	100	Dr J Y Tang, Chemistry	2012 Major in Biochemistry 2012 Major in Chemistry 2013 Major in Biochemistry 2013 Major in Chemistry 2014 Major in Biochemistry 2014 Major in Chemistry	2012 Minor in Chemistry 2013 Minor in Chemistry 2014 Minor in Chemistry
CHEM3141	Environmental chemistry		Pass in CHEM2041 Principles of chemistry or CHEM2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2442 Fundamentals of organic chemistry or CHEM2541 Physical chemistry I	Y	Y	2	May	100	Dr W T Chan, Chemistry		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
	Chemical process industries and analysis	6	Pass in CHEM2041 Principles of chemistry or CHEM2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2541 Physical chemistry I	Y	Y	2	May	20	Prof G K Y Chan, Chemistry		
CHEM3143	Introduction to materials chemistry		Pass in CHEM 2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2541 Physical chemistry I or CHEM2041 Principles of chemistry or CHEM2442 Fundamentals of organic chemistry	Y	Y	1	Dec	100	Prof W K Chan, Chemistry		
	Principles and applications of spectroscopic and analytical techniques	6	Pass in any CHEM2XXX level course	Y	Y	2	May	110	Dr X Li, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	
CHEM3241	Analytical chemistry II: chemical instrumentation		Pass in CHEM2041 Principles of chemistry or CHEM2241 Anlytical chemistry I or CHEM3146 Principles and applications of spectroscopic techniques	Y	Y	1	Dec	80	Dr W T Chan, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
HEM3242	Food and water analysis		Pass in CHEM2241 Analytical chemistry I or CHEM2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2441 Principles of chemistry I or CHEM2041 Principles of chemistry; and Pass in CHEM3241 Analytical chemistry II: chemical instrumentation, or already enrolled in this course.	Y	Y	2	May	50	Dr K M Ng, Chemistry		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
	Introductory instrumental chemical analysis		Pass in CHEM2041 Principles of chemistry or CHEM2241 Analytical chemistry I; and Not for students who have passed CHEM3241 Analytical chemistry II: chemical instrumentation or have already enrolled in this course.	Y	Y	2	May	100	Dr X Li, Chemistry		
	Analytical techniques for pharmacy students		For BPharm students only; and Pass in BPHM2136 Physical chemistry: principles and applications in pharmaceutical science	Y	Y	2	May	30	Dr X Li, Chemistry		
CHEM3341	Inorganic chemistry II		Pass in CHEM2341 Inorganic chemistry I	Y	Y	1	Dec	82	Prof V W W Yam, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	
HEM3342	Bioinorganic chemistry	6	Pass in CHEM2341 Inorganic chemistry	Y	Υ	2	May	50	Prof H Z Sun, Chemistry		

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015		Course Coordinator	(The Major/Minor that thi	s course appears as a required course) ajor / Minor
Domontonom	and Chaminature (Canada)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	-	Core Course (With Choices)
•	t of Chemistry (Cont'd)		D : 011514044 0 : 1 : 4 1						D (D)(201011: : 01 ::	
CHEM3441	Organic chemistry II		Pass in CHEM2441 Organic chemistry I; and Pass in CHEM3146 Principles of applications of spectroscopic techniques, or already enrolled in this course.	Y	Y	2	May	90	Prof D Yang, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry
	Organic chemistry of biomolecules		Pass in CHEM2442 Fundamentals of organic chemistry or CHEM2443 Fundamentals of organic chemistry for pharmacy students or CHEM3441 Organic chemistry II	Y	Y	1	Dec	50	Dr P H Toy, Chemistry		
CHEM3541	Physical chemistry II: introduction to quantum chemistry	6	Pass in CHEM2541 Physical chemistry I	Y	Y	1	Dec	80	Prof A S C Cheung, Chemistry	2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry	
CHEM3999	Directed studies in chemistry		Pass in at least 24 credits of advanced level compulsory/core chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major including CHEM2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2541 Physical chemistry I or CHEM2442 Fundamentals of organic chemistry or CHEM346 Principles and applications of spectroscopic techniques. This capstone course is for Chemistry Major students only.	Y	Y	2	No exam		Prof D L Phillips, Chemistry		
	Symmetry, group theory and applications		Pass in CHEM3341 Inorganic chemistry II	Y	Y	1	Dec	60	Prof V W W Yam, Chemistry		
	Interfacial science and technology	6	Pass in CHEM3541 Physical chemistry II: introduction to quantum chemistry	Y	Y	2	May	50	Prof G K Y Chan, Chemistry		
CHEM4144	Advanced materials		Pass in CHEM3143 Introduction to materials chemistry	Υ	Y	2	May	50	Prof W K Chan, Chemistry		
CHEM4145	Medicinal chemistry		Pass in CHEM3441 Organic chemistry II or CHEM3442 Organic Chemistry of Biomolecules	Y	Y	2	May	140	Prof H Z Sun, Chemistry		2012 Major in Biochemistry 2013 Major in Biochemistry 2014 Major in Biochemistry
	Modern chemical instrumentation and applications	6	Pass in CHEM3241 Analytical chemistry II: chemical instrumentation	Y	Y	1	Dec	50	Dr I K Chu, Chemistry		
	Analytical chemistry		Pass in CHEM3241 Analytical chemistry II: chemical instrumentation or CHEM3242 Food and water analysis	Y	Y	2	May	50	Dr K M Ng, Chemistry		
	Advanced inorganic chemistry		Pass in CHEM3341 Inorganic chemistry II (Students are strongly recommended to take CHEM4142 Symmetry, group theory and applications if they wish to take this course.)	Y	Y	1	Dec	60	Prof C M Che, Chemistry		2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry
CHEM4342	Organometallic chemistry		Pass in CHEM3341 Inorganic chemistry	Y	Y	1	Dec	40	Prof V W W Yam, Chemistry		
	Advanced organic chemistry		Pass in CHEM3441 Organic chemistry II	Y	Y	1	Dec	80	Prof D Yang, Chemistry		2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry
	Integrated organic synthesis	6	Pass in CHEM3441 Organic chemistry II	Y	Y	2	May	50	Prof P Chiu, Chemistry		2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry

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						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	of Chemistry (Cont'd) Chemical biology	6	Pass in CHEM3441 Organic chemistry II	Υ	Υ	2	May	50	Dr X C Li,		2012 Major in Biochemistry
			or BIOC3601 Metabolism						Chemistry		2012 Minor in Biochemistry 2013 Major in Biochemistry 2013 Minor in Biochemistry 2014 Major in Biochemistry 2014 Minor in Biochemistry
	Physical chemistry III: statistical thermodynamics and kinetic theory	6	Pass in CHEM3541 Physical chemistry II: introduction to quantum chemistry	Y	Y	2	May	40	Dr H Hu, Chemistry		2012 Major in Chemistry 2013 Major in Chemistry 2014 Major in Chemistry
CHEM4542	Computational chemistry	6	Pass in CHEM3541 Physical chemistry II: introduction to quantum chemistry or PHYS3351 Quantum mechanics.	Y	N	2	May	60	Prof G H Chen, Chemistry		
CHEM4543	Advanced physical	6	Pass in CHEM3541 Physical chemistry	Υ	Y	2	May	80	Prof G H Chen,		
CHEM4910	chemistry Chemistry literacy and research	6	II: introduction to quantum chemistry Pass in at least 24 credits of advanced level compulsory/core chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major including CHEM3241 Analytical chemistry II: chemical	Y	Y	2	No exam		Chemistry Dr X Li, Chemistry		
			instrumentation; and CHEM3341 Inorganic chemistry II; and CHEM3441 Organic chemistry II; and CHEM3541 Physical chemistry II: introduction to quantum chemistry. This capstone course is for Chemistry Major students only.								
	Capstone experience for chemistry undergraduates: HKUtopia		Students are expected to have satisfactorily completed all introductory chemistry core courses and at least 24 credits of advanced level compulsory/core chemistry courses in the Chemistry Major. Students who are interested in taking the course should contact the Department for application. This capstone course is for Chemistry Major students only.	Y	Y	S	No exam		Dr A P L Tong, Chemistry		
CHEM4966	Chemistry internship		Pass in at least 24 credits of advanced level compulsory/core chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Chemistry Major students only.	Y	Y	2, S	No exam		Dr W T Chan, Chemistry		
CHEM4999	Chemistry project		Pass in at least 24 credits of advanced level compulsory/core chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major including CHEM3241 Analytical chemistry II: chemistry instrumentation, and CHEM3341 Inorganic chemistry II, and CHEM3541 Physical chemistry II, and CHEM3541 Physical chemistry II: introduction to quantum chemistry. This capstone course is for Chemistry Major students only.	N	Y				Dr J Y Tang, Chemistry		

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that thi	s course appears as a required course) ajor / Minor
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
<u> </u>	t of Chemistry (Cont'd)										
ENVS3042		6	Pass in ENVS1401 Introduction to environmental science or BIOL1110 From molecules to cells or ENVS1301 Environmental life science; and CHEM2041 Principles of chemistry or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	Y	Y	2	May	60	Dr W T Chan, Chemistry		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
School of C											
	Practical Chinese for science students	6	NIL	Y	Y	1, 2	Dec, May		Mr K W Wong, Chinese		
Department	t of Earth Sciences										
	Introduction to climate science		NIL	Y	Y	2	May		Dr Z H Liu, Earth Sciences		2012 Major in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
EASC1401	Blue planet	6	NIL	Y	Y	1, 2	Dec, May		Dr P Bach, Earth Sciences	2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science	2012 Major in Environmental Science 2012 Minor in Earth Sciences 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Earth Sciences 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Earth Sciences 2014 Minor in Earth Sciences
EASC1402	Principles of geology	6	NIL	Y	Y	1	Dec		Prof Min Sun, Earth Sciences	2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology	2012 Minor in Earth Sciences 2013 Minor in Earth Sciences 2014 Minor in Earth Sciences
EASC1403	Geological heritage of Hong Kong	6	NIL	Y	Y	2	May	35	Dr P Y Tam, Earth Sciences		
EASC1404	Early life on earth	6	NIL	N	N			50	Dr K H Lemke, Earth Sciences		
EASC1405	Peaceful use of nuclear technologies	6	NIL	Y	Y	1	Dec		Dr S H Li, Earth Sciences		
	Fluid/solld interactions in earth processes		Pass in EASC1401 Blue planet or EASC1402 Principles of geology	Y	Y	2	May		Dr K Lemke, Earth Sciences	2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology	2012 Minor in Earth Sciences 2013 Minor in Earth Sciences 2014 Minor in Earth Sciences
EASC2402	Field methods	6	Pass in EASC1401 Blue planet or EASC1402 Principles of geology	Y	Y	1	Dec		Dr P Bach, Earth Sciences	2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology	
EASC2404	Introduction to atmosphere and hydrosphere		Pass in EASC1401 Blue planet or EASC1402 Principles of geology	Y	Y	1	Dec	50	Dr J R Ali, Earth Sciences	2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Minor in Environmental Science 2014 Minor in Environmental Science
EASC2406	Geochemistry	6	Pass in EASC1402 Principles of geology	Y	Y	1	Dec		Dr S H Li, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this	course appears as a required course)
	of Earth Sciences (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
·	Mineralogy		Pass in EASC1402 Principles of geology	Y	Y	1	Dec	30	Prof M Sun, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	
ASC2408	Planetary geology		Pass in EASC1401 Blue planet or EASC1402 Principles of geology or PHYS1650 Nature of the universe	Y	Y	2	May		Dr M H Lee, Earth Sciences	2012 Major in Astronomy 2013 Major in Astronomy 2014 Major in Astronomy	
ASC2409	Regional field studies	6	Pass in EASC1401 Blue Planet or EASC1402 Principles of Geology and consent of course coordinator	Y	Y	1	No exam	25	Dr J Ali, Earth Sciences		
	Global change: anthropogenic impacts	6	Pass in EASC2404 Introduction to atmosphere and hydrosphere or ENVS2001 Environmental field and lab course	Y	N	1	Dec		Dr Z H Liu, Earth Sciences		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
ASC3402	Petrology	6	Pass in EASC2407 Mineralogy	Y	Y	2	May		Prof G Zhao, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	
ASC3403	Sedimentary environments		Pass in EASC2402 Field methods or EASC3402 Petrology	Y	Y	2	May		Dr S C Chang, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science
ASC3404	Structural geology	6	Pass in EASC2402 Field methods and EASC3402 Petrology	Y	Y	1	Dec	40	Dr J R Ali, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	
EASC3405	Environmental remote sensing		Pass in BIOL2306 Ecology and evolution or EASC2404 Introduction to atmosphere and hydrosphere or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	N	Y			25	Prof Y Zong, Earth Sciences		2012 Major in Earth System Science 2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Earth System Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Earth System Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
ASC3406	Reconstruction of past climate		Pass in EASC2401 Fluid/solid interactions in earth processes	N	Y				Dr S H Li, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
ASC3408	Geophysics		Pass in EASC2401 Fluid/solid interactions in earth processes or EASC2402 Field methods or PHYS2250 Introductory mechanics	Y	Y	2	May		Prof P Wu, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science
	Igneous and metamorphic petrogenesis	6	Pass in EASC3402 Petrology	Y	Y	2	May	30	Prof M Sun, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	
	Hydrogeology		Pass in EASC2402 Field methods	Y	Y	1	Dec	40	Prof J J Jiao, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
EASC3412	Earth resources		Pass in EASC2402 Field methods or EASC3402 Petrology	Y	Y	1	Dec	40	Prof M F Zhou, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology

Course Code	Title	Credit	Pre-requisite	Available in			Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this course appears as a required course) Major / Minor	
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department	of Earth Sciences (Cont'd)										
EASC3413	Engineering geology		Pass in EASC3410 Hydrogeology, or already enrolled in this course	Y	Y	2	May	40	Prof J J Jiao, Earth Sciences		2012 Major in Geology 2013 Major in Geology 2014 Major in Geology
EASC3414	Soil and rock mechanics		Pass in EASC3410 Hydrogeology, or already enrolled in this course	Y	Y	2	May	40	Prof J J Jiao, Earth Sciences		2012 Major in Geology 2013 Major in Geology 2014 Major in Geology
EASC3415	Meteorology	6	Pass in EASC2404 Introduction to atmosphere and hydrosphere	Y	Y	1	Dec		Dr Z H Liu, Earth Sciences		2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science
EASC3416	Advanced geochemistry and geochronology		Pass in EASC2401 Fluid/solid interactions in earth processes or EASC2406 Geochemistry or EASC2407 Mineralogy	Y	N	2	May	50	Prof M F Zhou, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
EASC3999	Directed studies in earth sciences		Pass in at least 24 credits of advanced level earth sciences courses (EASC3XXX or EASC4XXX); and Cumulative GPA of 2.5 or above.	Y	Y	0	No exam		Prof M Sun, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
EASC4403	Biogeochemical cycles		Pass in ENVS3313 Environmental oceanography or EASC3403 Sedimentary environments or EASC3416 Advanced geochemistry and geochronology	N	Y				Dr Y Li, Earth Sciences	2012 Major in Earth System Science 2013 Major in Earth System Science 2014 Major in Earth System Science	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology
EASC4406	Earth dynamics		Pass in EASC3403 Sedimentary environments or EASC3404 Structural geology or EASC3408 Geophysics or EASC3409 Igneous and metamorphic petrogenesis	Y	Y	2	May		Prof G Zhao, Earth Sciences	2012 Major in Geology 2013 Major in Geology 2014 Major in Geology	
EASC4407	Regional geology		Pass in EASC3403 Sedimentary environments or EASC3404 Structural geology or EASC3409 Igneous and metamorphic petrogenesis	Y	Y	1	Dec	40	Dr J R Ali, Earth Sciences		2012 Major in Geology 2013 Major in Geology 2014 Major in Geology
EASC4408	Special topics in earth sciences	6	Pass in any EASC3XXX or EASC4XXX course	N	Y				TBC, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
EASC4911	Earth system: contemporary issues		Pass in at least 24 credits of advanced level compulsory/core earth sciences courses (EASC3XXX or EASC4XXX) in the Earth System Science Major including at least two of the following courses: EASC3410 Hydrogeology or EASC3415 Meteorology or ENVS3313 Environmental oceanography. This capstone course is for Earth System Science Major students only.	N	Y				TBC, Earth Sciences		

Course Code	Title	Credit	Pre-requisite	Available in			Exam held in 2014-2015	Course Coordinator	(The Major/Minor that this course appears as a required course) Major / Minor	
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department	t of Earth Sciences (Cont'd))								
	Integrated field studies		Pass in at least 24 credits of advanced level compulsory/core earth sciences courses (EASC3XXX or EASC4XXX) in the Geology Major including EASC3403 Sedimentary environments, EASC3404 Structural geology, EASC3409 Igneous and metamorphic petrogenesis This capstone course is for Geology Major students only.	Y	Y	2	No exam	 Dr J King, Earth Sciences		
EASC4966	Earth sciences internship		Pass in at least 24 credits of advanced level earth sciences courses (EASC3XXX or EASC4XXX). Students are expected to have satisfactorily completed their Year 3 study. This course is not a capstone course and students cannot use this course to fulfill the capstone requirement of the Earth System Science and Geology Majors.	Y	Y	2, S	No exam	Dr P Y Tam, Earth Sciences		
EASC4999	Earth sciences project		Pass in at least 24 credits of advanced level earth sciences courses (EASC3XXX or EASC4XXX); and Cumulative GPA of 2.7 or above.	N	Y			 Prof M Sun, Earth Sciences		2012 Major in Earth System Science 2012 Major in Geology 2013 Major in Earth System Science 2013 Major in Geology 2014 Major in Earth System Science 2014 Major in Geology
	Introduction to environmental science	6	NIL	Y	Y	1	Dec	 Dr C Dingle, Earth Sciences	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science	
ENVS3004	Environment, society and economics		Pass in CHEM2041 Principles of chemistry or EASC2404 Introduction to atmosphere and hydrosphere or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	Y	Y	2	May	 Prof Y Q Zong, Earth Sciences	2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science	
ENVS3007	Natural hazards and mitigation	6	Pass in EASC2401 Fluid/solid interactions in earth processes or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	Y	N	1	Dec	 Prof Y Q Zong, Earth Sciences		2012 Major in Earth System Science 2012 Major in Environmental Science 2012 Major in Geology 2012 Minor in Environmental Science 2013 Major in Earth System Science 2013 Major in Environmental Science 2013 Major in Geology 2013 Minor in Environmental Science 2014 Major in Earth System Science 2014 Major in Environmental Science 2014 Major in Geology 2014 Major in Geology 2014 Minor in Geology

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this cour Major /	se appears as a required course) Minor
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	of Earth Sciences (Cont'd)										
	Environmental oceanography		Pass in ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis or BIOL2306 Ecology and evolution or EASC2404 Introduction to atmosphere and hydrosphere	Y	Y	2	May		Dr S C Chang, Earth Sciences	2012 Minor in Marine Biology 2013 Minor in Marine Biology 2014 Minor in Marine Biology	2012 Major in Earth System Science 2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Earth System Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Earth System Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
ENVS3999	Directed studies in environmental science		Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major. Cumulative GPA of 2.5 or above in Environmental Science Major. This capstone course is for Environmental Science Major students only.	N	Y				Dr C Dingle, Earth Sciences		
ENVS4999	Environmental science project	12	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major; and Students must have a cumulative GPA of 3.0 or above in Environmental Science Major. This capstone course is for Environmental Science Major students only.	N	Y				Prof Y Q Zong, Earth Sciences		
Department	of Mathematics		; ,	-						'	'
MATH1011	University mathematics I	6	The course has no pre-requisite, but students are expected to have achieved Level 2 or above in HKDSE Mathematics or equivalent before enrolling the course; and Not for students with Level 2 or above in Module 1 or Module 2 of HKDSE Mathematics or equivalent.	Y	Y	1, 2	Dec, May		Dr K H Law, Mathematics		
	University mathematics II		Level 2 or above in Module 1, or Module 2 of HKDSE Mathematics or equivalent. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I; and Not for students who have passed MATH1821 Mathematical methods for actuarial science I, or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics), or have already enrolled in this course.	Y	Y	1, 2	Dec, May		Dr Y M Chan (1st sem); Prof J H Lu (2nd sem), Mathematics	2012 Major in Mathematics 2012 Major in Mathematics/Physics 2012 Major in Risk Management 2012 Major in Statistics 2012 Minor in Computational & Financial Mathematics 2013 Minor in Mathematics 2013 Major in Mathematics 2013 Major in Mathematics 2013 Major in Risk Management 2013 Major in Statistics 2013 Minor in Computational & Financial Mathematics 2013 Minor in Mathematics 2014 Major in Mathematics 2014 Major in Mathematics 2014 Major in Mathematics 2014 Major in Risk Management 2014 Major in Risk Management 2014 Minor in Computational & Financial Mathematics 2014 Minor in Mathematics	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
MATH1641	Mathematical laboratory and modeling	6	NIL	N	Y			20	TBC, Mathematics		

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this cour Major/	se appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	of Mathematics (Cont'd)				- N		_		· · · · · ·		
	Mathematical methods for actuarial science I		Level 4 or above in HKDSE Mathematics plus Module 1, or Level 4 or above in HKDSE Mathematics plus Module 2, or equivalent; and Not for students who have passed MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics), or have already enrolled in these courses. For BSc(ActuarSc) students only.		Y	1	Dec		Dr C W Wong, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
	Calculus and ordinary differential equations		Level 2 or above in Module 1, or Module 2 of HKDSE Mathematics or equivalent, or Pass in MATH1011 University Mathematics I (This course is exclusively for engineering students.)	Y	Y	1, 2	Dec, May	560	Prof K M Tsang (1st sem); Dr Y K Lau (2nd sem), Mathematics		
	Linear algebra, probability and statistics		Level 2 or above in Module 1, or Module 2 of HKDSE Mathematics or equivalent, or Pass in MATH1011 University Mathematics I (This course is exclusively for Engineering students.)	Y	Y	1, 2	Dec, May	560	Prof W K Ching (1st sem); Dr G Han (2nd sem), Mathematics		
	Fundamental concepts of mathematics		Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics)	Y	Y	1, 2	Dec, May		Dr Y M Chan, Mathematics	2012 Major in Mathematics 2013 Major in Mathematics 2014 Major in Mathematics	
	Multivariable calculus and linear algebra		Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics). Not for students who have passed MATH2822 Mathematical methods for actuarial science II or ((MATH2101 Linear algebra II) and MATH2211 Multivariable calculus), or have already enrolled in these courses.	Y	Y	2	May		Dr J T Chan, Mathematics	2014 Major in Risk Management 2014 Major in Statistics	
MATH2101	Linear algebra I		Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics)	Y	Y	1, 2	Dec, May		Dr K H Law, Mathematics	2012 Major in Mathematics 2012 Major in Mathematics/Physics 2012 Minor in Computational & Financial Mathematics 2013 Minor in Mathematics 2013 Major in Mathematics 2013 Major in Mathematics/Physics 2013 Minor in Computational & Financial Mathematics 2013 Minor in Mathematics 2014 Major in Mathematics 2014 Major in Mathematics 2014 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics 2014 Minor in Mathematics 2014 Minor in Mathematics	
MATH2102	Linear algebra II		Pass in MATH2101 Linear algebra I or MATH2822 Mathematical methods for actuarial science II	Y	Y	1, 2	Dec, May		Dr Y K Lau (1st sem); Dr Z Hua (2nd sem), Mathematics	2012 Major in Mathematics 2013 Major in Mathematics 2014 Major in Mathematics	

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this course Major / Mi	appears as a required course)
Domostano es	t of Mathematics (Contlat)					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
<u> </u>	t of Mathematics (Cont'd) Multivariable calculus	6	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics)	Y	Y	1, 2	Dec, May		Dr Z Hua (1st sem); Dr S P Yung (2nd sem), Mathematics	2012 Major in Mathematics 2012 Major in Mathematics/Physics 2012 Minor in Computational & Financial Mathematics 2012 Minor in Mathematics 2013 Major in Mathematics 2013 Major in Mathematics/Physics 2013 Minor in Computational & Financial Mathematics 2013 Minor in Mathematics 2014 Major in Mathematics 2014 Major in Mathematics/Physics 2014 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics 2014 Minor in Mathematics	
MATH2241	Introduction to mathematical analysis	6	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics) or MATH2822 Mathematical methods for actuarial science II	Y	Y	1, 2	Dec, May		Dr B Kane (1st sem); Dr Y M Chan (2nd sem), Mathematics	2012 Major in Mathematics 2013 Major in Mathematics 2014 Major in Mathematics	
MATH2822	Mathematical methods for actuarial science II	6	Pass in MATH1821 Mathematical methods for actuarial science I For BSc(ActuarSc) students only.	Y	Y	2	May		Dr J T Chan, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
MATH3001	Development of mathematical ideas	6	Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2211 Multivariable calculus and MATH2241 Introduction to mathematical	N	N				Prof W K Ching, Mathematics	2014 Dec III / Gradina Goldina	
MATH3002	Mathematics seminar	6	Pass in MATH2012 Fundamental concepts of mathematics, MATH2101 Linear algebra I, MATH2211 Multivariable calculus and MATH2241 Introduction to mathematical analysis. (This course is for second year BSc students only.)	Y	Y	2	Мау	12	Dr T W Ng, Mathematics		
MATH3301			Pass in MATH2101 Linear algebra I	Y	Y	1	Dec		Prof J H Lu, Mathematics	2012 Major in Mathematics 2012 Major in Mathematics/Physics 2013 Major in Mathematics 2013 Major in Mathematics/Physics 2014 Major in Mathematics 2014 Major in Mathematics	
MATH3303	Matrix theory and its applications	6	Pass in MATH2101 Linear algebra I and MATH2102 Linear algebra II	Υ	Y	1	Dec		Dr M Young, Mathematics		
MATH3304	Introduction to number theory	6	MATH2102 Linear algebra II, MATH2101 Linear algebra II, MATH2102 Linear algebra II, MATH2211 Multivariable calculus and MATH2241 Introduction to mathematical analysis; and Pass in MATH3301 Algebra I, or already enrolled in this course.	Y	Y	2	Мау		Prof K M Tsang, Mathematics		
MATH3401	,		Pass in MATH2211 Multivariable calculus	Y	Y	1	Dec		Prof W S Cheung, Mathematics	2012 Major in Mathematics 2012 Major in Mathematics/Physics 2013 Major in Mathematics 2013 Major in Mathematics/Physics 2014 Major in Mathematics 2014 Major in Mathematics/Physics	
MATH3403	Functions of a complex variable	6	Pass in MATH2211 Multivariable calculus and MATH2241 Introduction to mathematical analysis	Y	Y	1	Dec		Prof N Mok, Mathematics	2012 Major in Mathematics 2013 Major in Mathematics 2014 Major in Mathematics	

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that this cour	se appears as a required course) Minor
Donartmont	of Mathematics (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Differential equations		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	2	May	 Dr C W Wong, Mathematics		
	Computational methods and differential equations with applications		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	2	May	 Dr C W Wong, Mathematics		2012 Major in Environmental Science 2012 Minor in Computational & Financial Mathematics 2013 Major in Environmental Science 2013 Minor in Computational & Financial Mathematics 2014 Major in Environmental Science 2014 Minor in Computational & Financial Mathematics
MATH3600	Discrete mathematics		Pass in (MATH1013 University mathematics II and any 1 of Level 2 MATH courses) or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics and any 1 of level 2 MATH courses) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	1	Dec	 Prof W Zang, Mathematics		
MATH3601	Numerical analysis	6	Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	1	Dec	 Dr M Y Yim, Mathematics	2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics	
MATH3603	Probability theory	6	Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	1	Dec	 Dr G Han, Mathematics		2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics
MATH3901	Operations research I		Pass in MATH2101 Linear algebra I or MATH2102 Linear algebra II	Y	Y	1	Dec	 Prof S C K Chu, Mathematics		
MATH3904	Introduction to optimization		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	Y	Y	2	May	 Prof W Zang, Mathematics		2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics
MATH3905	Queueing theory and simulation		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)	N	Y			 Prof W K Ching, Mathematics		
MATH3906	Financial calculus		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II) or STAT2601 Probability and statistics I	Y	Y	1	Dec	 Dr C W Wong, Mathematics	2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics	

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that this cou	rse appears as a required course) Minor
Donartmont	of Mathematics (Cont'd)					0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed		Core Course (With Choices)
	Game theory and strategy	6	Pass in (MATH2101 Linear algebra I and	Y	Υ	2	May	 Dr K H Law,		2012 Minor in Computational & Financial Mathematics
		U	MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)				iviay	Mathematics		2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics
MATH3943	Network models in operations research	6	Pass in MATH2101 Linear algebra I and MATH2211 Multivariable calculus; and Pass in MATH3901 Operations research I, or already enrolled in this course	Y	Y	2	May	 Prof W Zang, Mathematics		
MATH3999	Directed studies in mathematics		Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XXX, MATH4XXX or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors, in addition to a pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2211 Multivariable calculus and MATH22211 Introduction to mathematical analysis. This capstone course is for Mathematics, and Mathematics, and Mathematics/Physics Majors students only.	Y	Y	2	No exam	 Prof W K Ching, Mathematics		
MATH4302	Algebra II	6	Pass in MATH3301 Algebra I	Y	Υ	2	May	 Prof J T Yu,		
MATH4402	Analysis II	6	Pass in MATH3401 Analysis I	Y	Υ	2	May	 Mathematics Dr F Ye, Mathematics		
MATH4404	Functional analysis	6	Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2211 Multivariable calculus and MATH2241 Introduction to mathematical analysis and MATH3401 Analysis I	Y	Y	2	May	 Dr C W Wong, Mathematics		
	Introduction to partial differential equations	6	Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2241 Introduction to mathematical analysis; and Pass in MATH3405 Differential equations, or already enrolled in this course	Y	Y	1	Dec	 Dr S Wu, Mathematics		
MATH4501	Geometry	6	Pass in MATH2101 Linear algebra I and MATH3401 Analysis I	Y	Y	1	Dec	 Dr J Fullwood, Mathematics	2012 Major in Mathematics/Physics 2013 Major in Mathematics/Physics 2014 Major in Mathematics/Physics	
	Introduction to differentiable manifolds	6	Pass in MATH3401 Analysis I (having taken MATH4501 Geometry would be helpful; the course can also be taken concurrently with MATH4402 Analysis II)	N	Y			 Prof W K Ching, Mathematics		
MATH4602	Scientific computing	6	Pass in MATH3601 Numerical analysis	N	Y			 Prof W K Ching, Mathematics		2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics
MATH4902	Operations research II	6	Pass in MATH2101 Linear algebra I and MATH2211 Multivariable calculus; and Pass in MATH3901 Operations research I, or already enrolled in this course	N	N			 Dr G Han, Mathematics		

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015		a Course Coordinator	(The Major/Minor that this co Major	urse appears as a required course) / Minor
_						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Mathematics (Cont'd)										
MATH4907	Numerical methods for financial calculus		Pass in MATH3906 Financial calculus or equivalent	Y	N	2	May		Dr S P Yung, Mathematics		2012 Minor in Computational & Financial Mathematics 2013 Minor in Computational & Financial Mathematics 2014 Minor in Computational & Financial Mathematics
MATH4910	Senior Mathematics seminar		Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors including MATH3301 Algebra I, MATH3401 Analysis I, MATH3403 Functions of a complex variable. Subject to approval by the Department. (This course is for third and fourth year students only.) This capstone course is for Mathematics, and Mathematics/Physics Majors students only.	N	Y			12	TBC, Mathematics		
MATH4911	Mathematics capstone project	6	Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors. Subject to approval by the Department. (This course is for third and fourth year students only.) This capstone course is for Mathematics, and Mathematics, and Mathematics/Physics Majors students only.	N	Y				TBC, Mathematics		
MATH4966	Mathematics internship	6	Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Mathematics, and Mathematics/Physics Majors students only.	Y	Y	2, S	No exam		Dr T W Ng, Mathematics		
MATH4999	Mathematics project	12	Majors students only. Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors including MATH3301 Algebra I and MATH3401 Analysis I. This capstone course is for Mathematics, and Mathematics/Physics Majors students only.	N	Y				Prof W K Ching, Mathematics		
MATH6101	Intermediate complex analysis	6	A first course in Complex Analysis such as MATH3403 Functions of a Complex Variable, and approval by the instructor.	Y	Y	1	Dec		Prof N Mok, Mathematics		
MATH6201	Topics in geometry	6	(MATH4402 Analysis II or MATH4501 Geometry) and (MATH4511 Introduction to Differentiable Manifolds or the approval of the instructor)	N	N				Dr S Wu, Mathematics		

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that this course a	appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed		Core Course (With Choices)
•	of Mathematics (Cont'd)									
MATH6202	Complex manifolds	6	A first course in Complex Analysis such as MATH3403 Functions of a Complex Variable, a first course in Differential Geometry such as MATH4501 Geometry, and approval by the instructor.	N	Y			 Prof N Mok, Mathematics		
MATH6217	Topics in financial mathematics	6	Pass in an advanced level mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) and subject to the approval of the course coordinator.	Y	Y	1	Dec	 Dr J Song, Mathematics		
	Topics in applied functional analysis	6	Pass in MATH3401 Analysis I and MATH4404 Functional Analysis, or approval of the course teacher.	N	N			 Dr S P Yung, Mathematics		
	Topics in algebra		Pass in MATH4302 Algebra II	Y	Y	2	May	 Prof J T Yu, Mathematics		
	Topics in applied discrete mathematics		Pass in MATH3301 Algebra I and MATH3600 Discrete mathematics	N	N			 Prof W Zang, Mathematics		
	Topics in mathematical programming and optimization	6	Pass in MATH3901 Operations research I, MATH3904 Introduction to optimization and MATH4902 Operations research II		Y			 Prof W Zang, Mathematics		
MATH6504	Geometric topology	6	Pass in MATH3301 Algebra I and MATH3401 Analysis I	N	Y			 Dr Z Hua, Mathematics		
MATH6505	Real analysis	6	Pass in MATH3401 Analysis I	Y	Y	2	May	 Prof W S Cheung, Mathematics		
	Intermediate complex analysis	6	A first course in Complex Analysis such as MATH3403 Functions of a Complex Variable, and approval by the instructor.	Y	Y	1	Dec	 Prof N Mok, Mathematics		
MATH7505	Real analysis	6	Pass in MATH3401 Analysis I	Y	Y	2	May	 Prof W S Cheung, Mathematics		
Department	of Physics									
	Physics for engineering students	6	Level 3 or above in HKDSE Physics or Combined Science with Physics components or equivalent (This course is exclusive for Engineering students.)	Y	Y	1, 2	Dec, May	 Prof M H Xie, Physics		
PHYS1055	How things work	6	NIL	Y	Y	2	May	 Dr M K Yip, Physics		
	Weather and climate	6		N	Y			 Dr K M Lee, Physics		
	Kitchen science	6		N	N			 Prof A B Djurisic, Physics		
	Problem solving in physics		Level 3 or above in HKDSE Physics or equivalent; Students without Level 3 or above in HKDSE Physics but having a pass in PHYS1240 Physics by inquiry may be allowed to take this course.	Y	Y	2	May	 Dr K M Lee, Physics	2012 Major in Physics 2013 Major in Physics 2014 Major in Physics	
PHYS1240	Physics by inquiry	6	NIL Not for students with level 3 or above in HKDSE Physics; and Not for students who have passed in PHYS1050 Physics for engineering students or already enrolled in this course; and Not for students who have passed in PHYS1250 Fundamental physics or already enrolled in this course.	Y	Y	1	Dec	 Dr J C S Pun, Physics		

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015	Course Coordinator	(The Major/Minor that this course Major / Mi	appears as a required course)
Denartment	e	2			0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)	
	• ' '		Level 3 or above in HKDSE Physics or equivalent; Students without Level 3 or above in HKDSE Physics but having a pass in PHYS1240 Physics by inquiry may be allowed to take this course; Not for students who have passed in PHYS1050 Physics for engineering students or already enrolled in this course.	Y	Y	1, 2	Dec, May	 Dr M K Yip, Physics	2012 Major in Astronomy 2012 Major in Mathematics/physics 2012 Major in Physics 2012 Minor in Astronomy 2013 Minor in Astronomy 2013 Major in Astronomy 2013 Major in Mathematics/Physics 2013 Major in Physics 2013 Minor in Astronomy 2013 Minor in Physics 2014 Major in Astronomy 2014 Major in Mathematics/Physics 2014 Major in Mathematics/Physics 2014 Major in Mathematics/Physics 2014 Minor in Mathematics/Physics 2014 Minor in Astronomy 2014 Minor in Astronomy	
PHYS1650	Nature of the universe	6	NIL	Y	Y	1, 2	Dec, May	 Dr K M Lee, Physics	2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy	
PHYS2055	Introduction to relativity		Pass in PHYS1250 Fundamental physics or PHYS1150 Problem solving in physics or PHYS1050 Physics for engineering students	Y	Y	2	May	 Dr K M Lee, Physics		
PHYS2150	Methods in physics I	6	Pass in PHYS1150 Problem solving in physics or MATH1011 University mathematics I or MATH1013 University mathematics II or MATH1851 Calculus and ordinary differential equations	Y	Y	1	Dec	 Dr F K Chow, Physics		
PHYS2155	Methods in physics II	6	Pass in PHYS1150 Problem solving in physics or MATH1011 University mathematics I or MATH1013 University mathematics II or MATH1851 Calculus and ordinary differential equations	Y	Y	2	May	 Dr F C C Ling, Physics		
PHYS2250	Introductory mechanics	6	Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students	Y	Y	1, 2	Dec, May	 Dr M K Yip, Physics	2012 Major in Astronomy 2012 Major in Mathematics/Physics 2012 Major in Physics 2012 Major in Physics 2013 Major in Astronomy 2013 Major in Astronomy 2013 Major in Physics 2013 Major in Physics 2014 Major in Physics 2014 Major in Astronomy 2014 Major in Mathematics/Physics 2014 Major in Mathematics/Physics 2014 Major in Physics 2014 Minor in Physics	
	Introductory electricity and magnetism		Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students	Y	Y	2	Мау	 Dr J C S Pun, Physics	2012 Major in Astronomy 2012 Major in Physics 2013 Major in Astronomy 2013 Major in Physics 2014 Major in Astronomy 2014 Major in Physics	
PHYS2260	Heat and waves		Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students	Y	Y	1	Dec	 Dr F C C Ling, Physics	2012 Major in Physics 2013 Major in Physics 2014 Major in Physics	

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that this c	course appears as a required course) or / Minor
Donostmon	Lef Dhysica (Cardy)					0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	t of Physics (Cont'd)		Dans in DLIVCAGEO Fundamental	Y	Y	4.0	Dee Meu	Dr F K Chau	2042 Majar in Astronomy	
	Modern physics		Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students			1, 2	Dec, May	 Dr F K Chow, Physics	2012 Major in Astronomy 2012 Major in Mathematics/Physics 2012 Major in Physics 2012 Minor in Astronomy 2012 Minor in Physics 2013 Major in Astronomy 2013 Major in Astronomy 2013 Major in Mathematics/Physics 2013 Major in Physics 2013 Minor in Physics 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Major in Astronomy 2014 Major in Mathematics/Physics 2014 Major in Physics 2014 Minor in Physics 2014 Minor in Physics	
PHYS2850	Atomic and nuclear physics	6	Pass in PHYS2265 Modern physics	N	N			 Dr S Z Zhang, Physics		
PHYS3150	Theoretical physics	6	Pass in (PHYS2250 Introductory mechanics or PHYS2255 Introductory electricity and magnetism or PHYS2265 Modern physics) and (PHYS2150 Methods in physics I or MATH2211 Multivariable calculus)	Y	Y	1	Dec	 Prof Z D Wang, Physics		
PHYS3350	Classical mechanics	6	Pass in PHYS2250 Introductory mechanics	Y	Y	1	Dec	 Dr S Z Zhang, Physics	2012 Major in Mathematics/Physics 2012 Major in Physics 2013 Major in Mathematics/Physics 2013 Major in Mathematics/Physics 2014 Major in Mathematics/Physics 2014 Major in Physics	
PHYS3351	Quantum mechanics	6	Pass in PHYS2265 Modern physics	Y	Y	1	Dec	 Dr W Yao, Physics	2012 Major in Mathematics/Physics 2012 Major in Physics 2013 Major in Mathematics/Physics 2013 Major in Physics 2014 Major in Mathematics/Physics 2014 Major in Physics	
PHYS3450	Electromagnetism	6	Pass in PHYS2255 Introductory electricity and magnetism	Y	Y	2	May	 Prof X D Cui, Physics	2012 Major in Physics 2013 Major in Physics 2014 Major in Physics	
PHYS3550	Statistical mechanics & thermodynamics	6	Pass in PHYS2260 Heat and waves	Y	Y	2	May	 Prof S Fung, Physics	2012 Major in Physics 2013 Major in Physics 2014 Major in Physics	
PHYS3551	Introductory solid state	6	Pass in PHYS2260 Heat and waves and PHYS2265 Modern physics	Y	Υ	1	Dec	 Prof J Gao,		
PHYS3650	physics Observational astronomy	6	PHYS2265 Modern physics Pass in PHYS1650 Nature of the universe and (PHYS2250 Introductory mechanics or PHYS2265 Modern physics)	Y	Y	1	Dec	 Physics Dr J J L Lim, Physics	2012 Major in Astronomy 2013 Major in Astronomy 2014 Major in Astronomy	2012 Minor in Astronomy 2013 Minor in Astronomy 2014 Minor in Astronomy
PHYS3651	The physical universe	6	Pass in PHYS1650 Nature of the universe and (PHYS2250 Introductory mechanics or PHYS2265 Modern physics)	Y	Y	1	Dec	 Dr S C Y Ng, Physics	2012 Major in Astronomy 2013 Major in Astronomy 2014 Major in Astronomy	2012 Minor in Astronomy 2013 Minor in Astronomy 2014 Minor in Astronomy
	Principles of astronomy		Pass in PHYS1650 Nature of the universe and (PHYS2250 Introductory mechanics or PHYS2265 Modern physics)	Y	Y	2	May	Dr J J L Lim, Physics	2012 Major in Astronomy 2013 Major in Astronomy 2014 Major in Astronomy	2012 Minor in Astronomy 2013 Minor in Astronomy 2014 Minor in Astronomy
PHYS3750	Laser and spectroscopy	6	Pass in PHYS3551 Introductory solid state physics, or already enrolled in this course.	Y	Y	1	Dec	 Prof S J Xu, Physics		

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015	Course Coordinator	(The Major/Minor that this co Major	ourse appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Physics (Cont'd)									
PHYS3751	Physics of nanomaterials	6	Pass in PHYS3351 Quantum mechanics, and Pass in PHYS3551 Introductory solid state physics, or already enrolled in this course.		N			 TBC, Physics		
PHYS3850	Waves and optics	6	Pass in PHYS2255 Introductory electricity and magnetism and PHYS2260 Heat and waves	Y	Y	2	May	 Dr J K C Leung, Physics		
PHYS3851	Atomic and nuclear physics	6	Pass in PHYS3351 Quantum mechanics	Υ	Y	2	May	 Dr S Z Zhang, Physics		
PHYS3999	Directed studies in physics	6	Pass in at least 24 credits of advanced level (3XXX level or above) compulsory/core courses of the Physics Major, Mathematics/Physics Major or Astronomy Major curriculum. This capstone course is for Astronomy, Mathematics/Physics, and Physics Majors students only.	Y	Y	2	No exam	 Dr J K C Leung, Physics		
PHYS4150	Computational physics	6	Pass in (PHYS3150 Theoretical physics or MATH3301 Algebra I or MATH3401 Analysis I or MATH3403 Functions of a complex variable or MATH3405 Differential equations); and Pass in any three of the following courses: PHYS3350 Classical mechanics, PHYS3351 Quantum mechanics, PHYS3450 Electromagnetism, PHYS3550 Statistical mechanics and thermodynamics	Y	Y	1	Dec	 Prof J Wang, Physics		
PHYS4151	Data analysis and modeling in physics	6	Pass in (PHYS3150 Theoretical Physics or MATH3301 Algebra I or MATH3401 Analysis I or MATH3403 Functions of a Complex Variable or MATH3405 Differential equations); and Pass in any one of the following courses: PHYS3350 Classical Mechanics, PHYS3351 Quantum Mechanics, PHYS3550 Statistical Mechanics & Thermodynamics	Y	Y	2	May	 Prof H F Chau, Physics		
PHYS4350	Advanced classical mechanics	6	Pass in PHYS3350 Classical mechanics	Y	Y	2	May	 Prof S Q Shen, Physics		
PHYS4351	Advanced quantum mechanics	6	Pass in PHYS3351 Quantum mechanics	Y	Y	2	May	 Dr W Yao, Physics	2012 Major in Mathematics/Physics 2013 Major in Mathematics/Physics 2014 Major in Mathematics/Physics	
PHYS4450	Advanced electromagnetism	6	Pass in PHYS3450 Electromagnetism	Y	Y	1	Dec	 Prof X D Cui, Physics		
PHYS4550	Advanced statistical mechanics	6	Pass in PHYS3550 Statistical mechanics & thermodynamics	Υ	Y	1	Dec	 Dr Y Tu, Physics		
PHYS4650	Stellar physics	6	Pass in PHYS3651 The physical universe and PHYS3351 Quantum mechanics	Y	Y	2	May	 Dr S C Y Ng, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy
PHYS4651	Selected topics in astrophysics	6	Pass in PHYS3351 Quantum mechanics or PHYS3450 Electromagnetism or PHYS3550 Statistical mechanics & thermodynamics or PHYS3651 The physical universe	N	Y			 Prof K S Cheng, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015	Course Coordinator	(The Major/Minor that this co Major	urse appears as a required course) / Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
-	t of Physics (Cont'd)									
PHYS4652	Planetary science	6	Pass in PHYS3651 The physical universe or (PHYS3350 Classical mechanics and PHYS3550 Statistical mechanics & thermodynamics)	N	Y			 Dr M H Lee, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy
PHYS4653	Cosmology	6	Pass in PHYS3651 The physical universe or PHYS3652 Principles of astronomy	Y	N	2	May	 Prof K S Cheng, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy
PHYS4654	General relativity	6	Pass in PHYS2055 Introduction to relativity and PHYS3350 Classical mechanics	Y	N	1	Dec	 Dr K M Lee, Physics		2012 Minor in Astronomy 2013 Minor in Astronomy 2014 Minor in Astronomy
PHYS4655	Interstellar medium	6	Pass in PHYS3651 The physical universe or (PHYS3351 Quantum mechanics and PHY3550 Statistical mechanics & thermodynamics)	Y	N	2	May	 Dr M H Lee, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy
PHYS4750	Experimental physics	6	TBC	N	N			 TBC, Physics		,
PHYS4966	Physics internship	6	Pass in any 24 credits of advanced level (3XXX level or above) compulsory/core courses of the Physics Major, Mathematics/Physics Major or Astronomy Major curriculum. This capstone course is for Astronomy, Mathematics/Physics, and Physics Majors students only.	Y	Y	S	No exam	 Dr J C S Pun, Physics		
PHYS4999	Physics project	12	Pass in at least 24 credits of advanced level (3XXX level or above) compulsory/core courses of the Physics Major, Mathematics/Physics Major or Astronomy Major curriculum. This capstone course is for Astronomy, Mathematics/Physics, and Physics Majors students only.	N	Y			 Dr J K C Leung, Physics		
PHYS6350	Graduate classical mechanics	6	TBC	N	Y			 TBC, Physics		
PHYS6351	Graduate quantum mechanics	6	TBC	N	Y			 TBC, Physics		
PHYS6450	Graduate electromagnetism	6	TBC	N	Y			 TBC, Physics		
PHYS6550	Graduate statistical mechanics	6	TBC	N	N			 TBC, Physics		
PHYS6551	Solid state physics	6	TBC	N	Y			 TBC,		
	Stellar atmospheres		TBC	N	N			 Physics TBC, Physics		2012 Major in Astronomy 2012 Minor in Astronomy 2013 Major in Astronomy 2013 Minor in Astronomy 2014 Major in Astronomy 2014 Minor in Astronomy
PHYS6750	Nanophysics	6	TBC	N	Y			 TBC, Physics		

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015	Course Coordinator	(The Major/Minor that this cou	urse appears as a required course) / Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Physics (Cont'd) Environmental radiation	6	Pass in PHYS2265 Modern physics or CHEM2041 Principles of chemistry or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	Y	N	1	Dec	 Dr J K C Leung, Physics		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
NVS3010	Sustainable energy and environment	6	Pass in PHYS2260 Heat and waves or CHEM2041 Principles of chemistry or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis	N	Y			 Prof A B Djurisic, Physics		2012 Major in Environmental Science 2012 Minor in Environmental Science 2013 Major in Environmental Science 2013 Minor in Environmental Science 2014 Major in Environmental Science 2014 Minor in Environmental Science
aculty of	Science		I						I	2014 Million III Environmental Science
	Scientific method and reasoning		NIL (This course is compulsory for all students taking a Science major offered by the Faculty of Science. Students should take this course in their first year.)	Y	Y	1, 2	Dec, May	Dr K F Lam, Statistics & Actuarial Science	2012 Major in Astronomy 2012 Major in Biochemistry 2012 Major in Biological Sciences 2012 Major in Chemistry 2012 Major in Earth System Science 2012 Major in Eology & Biodiversity 2012 Major in Environmental Science 2012 Major in Food & Nutritional Science 2012 Major in Geology 2012 Major in Mathematics 2012 Major in Mathematics 2012 Major in Mathematics/Physics 2012 Major in Molecular Biology & Biotechnology 2012 Major in Physics 2012 Major in Sisk Management 2012 Major in Statistics 2013 Major in Statistics 2013 Major in Biological Sciences 2013 Major in Biological Sciences 2013 Major in Horemistry 2013 Major in Earth System Science 2013 Major in Food & Nutritional Science 2013 Major in Geology 2013 Major in Geology 2013 Major in Mathematics/Physics 2013 Major in Mathematics 2013 Major in Mathematics 2013 Major in Mathematics 2013 Major in Mathematics 2013 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics 2014 Major in Biological Sciences 2014 Major in Biological Sciences 2014 Major in Statistics 2014 Major in Biological Sciences 2014 Major in Biological Sciences 2014 Major in Biological Sciences 2014 Major in Earth System Science 2014 Major in Erwironmental Science 2014 Major in Food & Nutritional Science 2014 Major in Food & Nutritional Science 2014 Major in Mathematics	

Course	Title	Credit	Pre-requisite	Availa	able in	Semester	Exam held		Course Coordinator		
Code						offered in 2014-2015	in 2014-2015			(The Major/Minor that this course Major / Mi	appears as a required course)
Faculty of 6	Prince (Control					0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
-	Science (Cont'd)		To the								
SCNC1112	Fundamentals of modern science	6	NIL (This course is compulsory for all students taking a Science major offered by the Faculty of Science. Students should take this course in their first year.)	Y	Y	1, 2	Dec, May		Dr J C S Pun, Physics	2012 Major in Astronomy 2012 Major in Biochemistry 2012 Major in Biochemistry 2012 Major in Earth System Science 2012 Major in Earth System Science 2012 Major in Earth System Science 2012 Major in Foology & Biodiversity 2012 Major in Foology & Biodiversity 2012 Major in Food & Nutritional Science 2012 Major in Mathematics 2012 Major in Mathematics 2012 Major in Mathematics 2012 Major in Molecular Biology & Biotechnology 2012 Major in Molecular Biology & Biotechnology 2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Siochemistry 2013 Major in Biochemistry 2013 Major in Biochemistry 2013 Major in Earth System Science 2013 Major in Eoology & Biodiversity 2013 Major in Food & Nutritional Science 2013 Major in Mathematics 2013 Major in Risk Management 2013 Major in Statistics 2014 Major in Statistics 2014 Major in Statistics 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Biochemistry 2014 Major in Chemistry 2014 Major in Chemistry 2014 Major in Chemistry 2014 Major in Chemistry 2014 Major in Food & Nutritional Science 2014 Major in Chemistry 2014 Major in Decology & Biodiversity 2014 Major in Chemistry 2014 Major in Food & Nutritional Science 2014 Major in Geology 2014 Major in Mathematics/Physics 2014 Major in Risk Management	
SCNC2121	Sustainable food production	6	Students are expected to have passed at least 30 credits of level 1 and/or level 2 science courses. Students will also need to pass an interview in order to be enrolled in the course.		Y	S	No exam	32	Dr H S El-Nezami, Biological Sciences	2014 Major in Statistics	
SCNC2122	Marine life science: a North East Pacific perspective	6	Students are expected to have passed at least 30 credits of level 1 and/or level 2 science courses. Students will need to pass an interview in order to be enrolled in the course.	Y	Y	S	Summer	32	Dr T Vengatesen, Biological Sciences		

Course Code	Title	Credit	· .	Avail	able in		Exam held in 2014-2015	Course Coordinator	(The Major/Minor that th	is course appears as a required course) dajor / Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	t of Statistics and Actuar									
STAT1600	Statistics: ideas and concepts		NIL	Y	Y	1, 2	Dec, May	 Prof W K Li, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Risk Management 2013 Major in Statistics 2014 Major in Risk Management 2014 Major in Risk Management	
STAT1601	Elementary statistical methods	6	Level 2 or above in HKDSE Mathematics or equivalent; and Not for students with Level 2 or above in HKDSE Mathematics Extended Module 1 or 2; and Not for students who have passed or already enrolled in any of the following courses: STAT2901 Probability and statistics: foundations of actuarial science, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics, ECON1280 Analysis of economic data	Y	Y	1, 2	Dec, May	 Mrs G M Jing, Statistics & Actuarial Science		2012 Major in Environmental Science 2012 Minor in Risk Management 2012 Minor in Statistics 2013 Major in Environmental Science 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Major in Environmental Science 2014 Minor in Risk Management 2014 Minor in Risk Management 2014 Minor in Statistics
STAT1602	Business statistics	6	NIL Not for students who have passed or already enrolled in any of the following courses: STAT1601 Elementary statistical methods, STAT2601 Probability and statistics I, STAT1603 Introductory statistics, STAT2901 Probability and statistics: foundations of actuarial science, ECON1280 Analysis of economic data (This course is exclusive for School of Business students.)	Y	Y	1, 2	Dec, May	 Dr R W L Wong, Statistics & Actuarial Science		2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Risk Management 2014 Minor in Statistics
STAT1603	Introductory statistics	6	(Level 2 or above in HKDSE Mathematics Extended Module 1 or 2 or equivalent) or (Pass in MATH1011 University Mathematics I, or already enrolled in this course); and Not for students who have passed or already enrolled in any of these courses: STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT2901 Probability and statistics: foundations of actuarial science	Y	Y	1	Dec	 Dr E K F Lam, Statistics & Actuarial Science		2012 Major in Environmental Science 2012 Minor in Risk Management 2012 Minor in Statistics 2013 Major in Environmental Science 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Major in Environmental Science 2014 Minor in Risk Management 2014 Minor in Risk Management 2014 Minor in Statistics

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015	 Course Coordinator		
Code						2014-2015	IN 2014-2015		(The Major/Minor that th	nis course appears as a required course) Major / Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Departmen	t of Statistics & Actuarial Sc	cience	· · ·							
	Probability and statistics I	6	Pass in MATH2014 Multivariable calculus and linear algebra, or already enrolled in this course, for students admitted in 2014 or thereafter; or Pass in MATH1013 University mathematics II, or already enrolled in this course, for students admitted in 2013 or before; or Pass in MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics, for students admitted in 2013 or before; and Not for students who have passed in STAT1603 Introductory statistics, or already enrolled in this course; Not for students who have passed in STAT2901 Probability and statistics: foundations of actuarial science, or already enrolled in this course; and Not for BSc(ActuarSc) students.	Y	Y	1, 2	Dec, May	 Dr Y K Chung, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics 2014 Major in Risk Management 2014 Major in Statistics	2012 Minor in Actuarial Studies 2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Actuarial Studies 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Actuarial Studies 2014 Minor in Risk Management 2014 Minor in Risk Management 2014 Minor in Statistics
STAT2602	Probability and statistics II	6	Pass in STAT2601 Probability and statistics I	Y	Y	1, 2	Dec, May	 Dr Y K Chung, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Statistics 2013 Major in Statistics 2014 Major in Risk Management 2014 Major in Risk Management 2014 Major in Statistics	2012 Minor in Actuarial Studies 2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Actuarial Studies 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Actuarial Studies 2014 Minor in Risk Management 2014 Minor in Risk Management 2014 Minor in Statistics
STAT2603	Data management with SAS	6	Pass in STAT1600 Statistics: ideas and concepts, or already enrolled in this course	Y	Y	1, 2	Dec, May	 Dr C W Kwan, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Risk Management 2013 Major in Statistics	2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Risk Management 2014 Minor in Statistics
STAT2605	Demographic and socio- economic statistics	6	(Level 2 or above in HKDSE Mathematics or Level 2 or above in HKDSE Mathematics Exended Module 1 or 2 or equvialent); and Pass in or already enrolled in any of these courses: BIOL2102 Biostatistics, ECON1280 Analysis of economic data, STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics, STAT2901 Probability and statistics; foundations of actuarial science		Y	2	May	 Ms L M S Kwan, Statistics & Actuarial Science		2012 Minor in Actuarial Studies 2012 Minor in Statistics 2013 Minor in Actuarial Studies 2013 Minor in Statistics 2014 Minor in Actuarial Studies 2014 Minor in Statistics

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2014-2015	Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that th	is course appears as a required course)
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed		Core Course (With Choices)
•	t of Statistics & Actuarial S		· ,							
STAT2901	Probability and statistics: foundations of actuarial science		(Pass in MATH1821 Mathematical methods for actuarial science I (for BSc(ActuarSc) students) or already enrolled in this course) or (Pass in MATH1013 University mathematics II or already enrolled in this course (for students outside the BSc(ActuarSc) programme); and Not for students who have passed or enrolled in any of these courses: STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics	Y	Y	2	May	 Dr Y K Chung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
STAT2902	Financial mathematics		Pass in STAT2901 Probability and statistics: foundations of actuarial science or already enrolled in this course; and Not for students who have passed in STAT3615 Practical mathematics for investment, or already enrolled in this course.	Y	Y	2	May	 Prof K C Yuen, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
STAT3600	Linear statistical analysis	6	Pass in STAT2602 Probability and statistics II; and Not for students who have passed in STAT3907 Linear models and forecasting, or have already enrolled in this course.	Y	Y	1, 2	Dec, May	 Prof S M S Lee, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Risk Management 2013 Major in Statistics 2014 Major in Risk Management 2014 Major in Statistics	2012 Minor in Statistics 2013 Minor in Statistics 2014 Minor in Statistics
STAT3602	Statistical inference	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models	Y	Y	1	Dec	 Prof S M S Lee, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Statistics 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Statistics 2013 Minor in Statistics 2014 BSc in Actuarial Science 2014 Major in Statistics 2014 Major in Statistics
STAT3603	Probability modelling		Pass in STAT2601 Probability and statistics I; and Not for students who have passed in MATH3603 Probability theory, or have already enrolled in this course; and Not for students who have passed in STAT3903 Stochastic models, or have already enrolled in this course.	Y	Y	1	Dec	 Dr K S Chong, Statistics & Actuarial Science	2012 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics	2012 Major in Risk Management 2012 Minor in Statistics 2013 Major in Risk Management 2013 Minor in Statistics 2014 Major in Risk Management 2014 Minor in Statistics
STAT3604	Design and analysis of experiments	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3611 Computer-aided data analysis	Y	Y	2	May	 Dr G Li, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics 2014 Minor in Statistics 2014 Minor in Statistics

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that this cour Major/	se appears as a required course) Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Statistics & Actuarial Sc		· · ·							
STAT3605	Quality control and management		Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2602 Probability and statistics II or (STAT1603 Introductory statistics and any University level 2 course) or STAT3902 Statistical models	Y	Y	2	May	 Dr K S Chong, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics
TAT3606	Business logistics	6	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2601 Probability and statistics I or (STAT1603 Introductory statistics and any University level 2 course) or STAT2901 Probability and statistics: foundations of actuarial science: and Not for students who have passed MATH3901 Operations research I, or have already enrolled in this course.	Y	Y	1	Dec	 Ms O T K Choi, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics 2014 Minor in Statistics
STAT3607	Statistics in clinical medicine and bio-medical research	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models	Y	Y	2	May	 Prof G Yin, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics
	Statistical genetics		Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models	Y	Y	2	May	 Prof T W K Fung, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Major in Statistics 2014 Minor in Statistics
TAT3609	The statistics of investment risk	6	Pass in STAT2602 Probability and statistics II or (STAT1603 Introductory statistics and any University level 2 course) or STAT3611 Computer-aided data analysis or STAT3614 Business forecasting; and Not for students who have passed in FINA2320 Investments and portfolio analysis, or have already enrolled in this course; and Not for BSc(Actuarial Science) students	Y	Y	1	Dec	 Dr K P Wat, Statistics & Actuarial Science	2012 Major in Risk Management 2013 Major in Risk Management 2014 Major in Risk Management	2012 Minor in Risk Management 2013 Minor in Risk Management 2014 Minor in Risk Management

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015	Quota	Course Coordinator	(The Major/Minor that this co Maior	urse appears as a required course) / Minor
			e (Cont'd)			0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Statistics & Actuarial		· · · ·								
STAT3610	Risk management and insurance		Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2601 Probability and statistics I or (STAT1603 Introductory statistics and any University level 2 course) or STAT2901 Probability and statistics: foundations of actuarial	Y	Y	2	May		Dr R W L Wong, Statistics & Actuarial Science		2012 Major in Risk Management 2012 Minor in Risk Management 2013 Major in Risk Management 2013 Minor in Risk Management 2014 Major in Risk Management 2014 Minor in Risk Management
FAT3611	Computer-aided data analysis	6	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course) and Not for students who have passed in or have already enrolled in any of these courses: STAT2601 Probability and statistics I, STAT2901 Probability and statistics: foundations of actuarial science, STAT3616 Advanced SAS programming	N	N				Dr E K F Lam, Statistics & Actuarial Science		2012 Major in Environmental Science 2012 Minor in Risk Management 2012 Minor in Statistics 2013 Major in Environmental Science 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Major in Environmental Science 2014 Minor in Risk Management 2014 Minor in Risk Management
TAT3612	Data mining	6	Pass in STAT2602 Probability and statistics II or (STAT1603 Introductory statistics and any University level 2 course) or STAT3902 Statistical models	Y	Y	2	No exam	10	Dr G C S Lui, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Major in Statistics 2012 Minor in Risk Management 2012 Minor in Risk Management 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Major in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 Major in Statistics 2014 Major in Risk Management 2014 Minor in Statistics

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this cou Major/	rse appears as a required course) Minor
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	t of Statistics & Actuarial Sc		<u>'</u>								
	Marketing engineering		Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2601 Probability and statistics I or (STAT1603 Introductory statistics and any University level 2 course) or STAT2901 Probability and statistics: foundations of actuarial science	Y	Y	1	Dec		Dr C W Kwan, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics 2014 Minor in Statistics
STAT3614	Business forecasting	6	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course). STAT2601 Probability and statistics I, STAT2901 Probability and statistics: foundations of actuarial science, STAT3907 Linear models and forecasting, STAT4601 Time-series analysis, ECON2280 Introductory econometrics.	N	N				Dr R W L Wong, Statistics & Actuarial Science		2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Risk Management 2014 Minor in Risk Management
STAT3615	Practical mathematics for investment	6	Pass in (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2601 Probability and statistics I or (STAT1603 Introductory statistics and any University level 2 course) or STAT2901 Probability and statistics: foundations of actuarial statistics: foundations of actuarial Not for students who have passed in STAT2902 Financial mathematics, or have already enrolled in this course.	Y	Y	2	May		Prof K C Yuen, Statistics & Actuarial Science	2012 Major in Risk Management 2013 Major in Risk Management 2014 Major in Risk Management	2012 Minor in Actuarial Studies 2012 Minor in Risk Management 2013 Minor in Actuarial Studies 2013 Minor in Risk Management 2014 Minor in Actuarial Studies 2014 Minor in Risk Management
STAT3616	Advanced SAS programming	6	STAT2601 Probability and statistics I or STAT2901 Probability and statistics: foundations of actuarial science (Students are strongly recommended to take STAT2603 Data management with SAS prior to taking this course.)	Y	Y	2	May	10	Prof K W Ng, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Statistics 2012 Minor in Statistics 2013 BSc in Actuairal Science 2013 Major in Statistics 2013 Minor in Statistics 2014 BSc in Actuairal Science 2014 Major in Statistics 2014 Minor in Statistics

Course Code		Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this	course appears as a required course)
			· ,			0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	t of Statistics & Actuarial Sample survey methods	6	(Cont'd) Pass or already enrolled in: BIOL2102 Biostatistics, or (ECON1280 Analysis of economic data and any University level 2 course), or (STAT1601 Elementary statistical methods and any University level 2 course), or (STAT1602 Business statistics and any University level 2 course), or STAT2601 Probability and statistics I, or (STAT1603 Introductory statistics and any University level 2 course), or STAT2901 Probability and statistics: foundations of actuarial science.	Y	Y	2	May		Ms O T K Choi, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics
STAT3618	Derivatives and risk management	6	Pass in STAT3615 Practical mathematics for investment; and Not for BSc(Actuarial Science) students; and Not for students who have passed in STAT3910 Financial economics I, or have already enrolled in this course; and Not for students who have passed in STAT3905 Introduction to financial derivatives, or have already enrolled in this course; and Not for students who have passed in STAT3905 Introduction to financial derivatives, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.	Y	Y	1	Dec		Dr R W L Wong, Statistics & Actuarial Science		2012 Major in Risk Management 2012 Minor in Risk Management 2013 Major in Risk Management 2013 Minor in Risk Management 2014 Major in Risk Management 2014 Minor in Risk Management
STAT3620	Modern nonparametric statistics	6	Pass in STAT2602 Probability and statistics II	Y	Y	1	Dec		Dr P L H Yu, Statistics & Actuarial Science		2012 Major in Statistics 2012 Minor in Statistics 2013 Major in Statistics 2013 Minor in Statistics 2014 Major in Statistics 2014 Minor in Statistics
STAT3621	Statistical data analysis	6	STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting (Students are strongly recommended to take STAT2603 Data management with SAS prior to taking this course.)	Y	Y	2	May	10	Dr G Tian, Statistics & Actuarial Science		2012 Major in Statistics 2012 Major in Statistics 2013 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics 2014 Major in Statistics 2014 Major in Statistics

Course Code	Title	Credit	Pre-requisite	Avail	able in		Exam held in 2014-2015		Course Coordinator		
Code						2014-2015				(The Major/Minor that this cou Major/	se appears as a required course) Minor
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Statistics & Actuarial Sc		· · · · · · · · · · · · · · · · · · ·								
STAT3799	Directed studies in statistics		Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in the Major in Risk Management / Statistics; and Pass in 18 credits from: STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT2602 Probability and statistics II, STAT2602 Probability and statistics II, STAT2603 Data management with SAS, STAT1603 Introductory statistics, STAT1605 Introduction to demographic and socio-economic statistics, STAT2901 Probability and statistics: foundations of actuarial science, STAT2901P inancial mathematics; and Not for students who have already enrolled in STAT4672 Statistics project in this academic year. This capstone course is for Risk Management, and Statistics Majors students only; and consent of Major Coordinator.	N	Y	•••		30	Prof S M S Lee, Statistics & Actuarial Science		
STAT3901	Life contingencies	6	(Pass in STAT2602 Probability and statistics II and STAT3615 Practical mathematics for investment) or (Pass in STAT2902 Financial mathematics and (Pass in STAT3902 Statistical models, or already enrolled in this course)) or (Pass in STAT2602 Probability and statistics II and STAT2902 Financial mathematics)	Y	Y	1	Dec		Dr E C K Cheung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
STAT3902	Statistical models	6	Pass in STAT2901 Probability and statistics: foundations of actuarial science; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec		Dr G Tian, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
STAT3903	Stochastic models	6	For BSc(Actuarial Science) students only; and Pass in STAT2901 Probability and statistics: foundations of actuarial science; and Not for students who have passed in MATH3603 Probability theory, or have already enrolled in this course; and Not for students who have passed in STAT3603 Probability modelling, or have already enrolled in this course.	Y	Y	2	May		Dr K S Chong, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	

Course Code	Title	Credit		Availa	able in		Exam held in 2014-2015	 Course Coordinator	(The Major/Minor that thi	s course appears as a required course) lajor / Minor
						0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
epartment	t of Statistics & Actuarial Sc	ience (Cont'd)							
	Corporate finance for actuarial science		[(Pass in ACCT1101 Introduction to accounting and STAT2902 Financial mathematics) or (Pass in STAT3610 Risk management and insurance and STAT3615 Practical mathematics for investment)]; and Not for students who have passed in FINA1310 Corporate finance, or have already enrolled in this course.	Y	Y	2	May	 Dr J K Woo, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
3TAT3905	Introduction to financial derivatives		Pass in STAT2902 Financial mathematics; and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.	Y	Y	1	Dec	 Dr E C K Cheung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
STAT3906	Risk theory I		Pass in STAT3903 Stochastic models, or already enrolled in this course; or Pass in STAT3603 Probability modelling or MATH3603 Probability theory	Y	Y	2	May	 Dr K C Cheung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
TAT3907	Linear models and forecasting	6	(Pass in STAT2602 Probability and statistics II; or Pass in STAT3902 Statistical models, or already enrolled in this course); and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT3600 Linear statistical analysis, or have already enrolled in this course; and Not for students who have passed in STAT4601 Time-series analysis, or have already enrolled in this course; and Not for students who have passed in STAT4601 Time-series analysis, or have already enrolled in this course; and Not for students who have passed in ECON2280 Introductory econometrics, or have already enrolled in this course.	Y	Y	2	May	 Prof Y Lam, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
	Credibility theory and loss distributions	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3906 Risk theory	Υ	Y	1	Dec	 Dr K C Cheung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
3TAT3909	Advanced life contingencies		Pass in STAT3901 Life contingencies, or already enrolled in this course; and For BSc(Actuarial Science) students only.	Y	Y	2	May	 Prof H L Yang, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	

Course Code	Title	Credit	Pre-requisite	Availa	able in		Exam held in 2014-2015	 Course Coordinator	(The Maior/Minor that th	nis course appears as a required course) Major / Minor
			ee (Cont'd)			2014-2015 0=year long 1=1st sem 2=2nd sem S=summer		TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	t of Statistics & Actuarial S		<u> </u>							
	Financial economics I		Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.	Y	Y	1	Dec	 Prof H L Yang, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
3TAT3911	Financial economics II		Pass in MATH3603 Probability theory or STAT3603 Probability modelling or STAT3903 Stochastic models or STAT3910 Financial economics I	Y	Y	2	May	 Prof H L Yang, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Major in Risk Management 2012 Minor in Actuarial Studies 2013 Major in Risk Management 2013 Minor in Actuarial Studies 2014 Major in Risk Management 2014 Minor in Actuarial Studies
STAT3951	Advanced contingencies		Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec	 Dr E C K Cheung, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
STAT3952	Investment and asset management		Pass in STAT3901 Life contingencies; and For BSc(Actuarial Science) students only; and Not for students who have passed in FINA2320 Investments and portfolio analysis, or have already enrolled in this course.	N	N			 TBC, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
TAT3953	Fundamentals of actuarial practice		Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.	Y	Y	1	No exam	 Dr L F K Ng, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
STAT3954	Current topics in actuarial science	6	(Pass in STAT3901 Life contingencies, or already enrolled in this course; or Pass in STAT3909 Advanced life contingencies, or already enrolled in this course); and For BSc(Actuarial Science) students only.	N	N			 Prof W K Li, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
TAT3955	Survival analysis	6	Pass in STAT3902 Statistical models, or already enrolled in this course; or Pass in STAT3600 Linear statistical analysis or STAT3901 Life contingencies	Y	Y	2	May	 Dr E K F Lam, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Statistics 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Statistics 2013 Minor in Statistics 2014 BSc in Actuarial Science 2014 Major in Statistics 2014 Minor in Statistics
STAT3956	Pension funds and pension mathematics		Pass in STAT3909 Advanced life contingencies	Y	Y	1	Dec	 Prof G Ma, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science

Course Code	Title	Credit	Pre-requisite	Avail	able in	Semester offered in 2014-2015	Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this Ma	course appears as a required course) or / Minor
Donortmon	t of Statistics & Actuarial S	Solonoo	(Contd)			0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Time-series analysis		Pass in STAT3600 Linear statistical analysis; and Not for students who have passed in STAT3614 Business forecasting, or have already enrolled in this course; and Not for students who have passed in STAT3907 Linear models and forecasting, or have already enrolled in this course.	Y	Y	1	Dec		Dr G Li, Statistics & Actuarial Science	2012 Major in Risk Management 2012 Major in Statistics 2013 Major in Risk Management 2013 Major in Statistics 2014 Major in Risk Management 2014 Major in Statistics	2012 Minor in Risk Management 2012 Minor in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics 2014 Minor in Risk Management 2014 Minor in Risk Management
STAT4602	Multivariate data analysis	6	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	2	May	6	Prof T W K Fung, Statistics & Actuarial Science	2012 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics	2012 BSc in Actuarial Science 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Minor in Statistics 2014 BSc in Actuarial Science 2014 Minor in Statistics
STAT4603	Current topics in risk management	6	Pass in STAT4601 Time-series analysis	N	Y				TBC, Statistics & Actuarial Science		2012 Major in Risk Management 2012 Minor in Risk Management 2013 Major in Risk Management 2013 Minor in Risk Management 2014 Major in Risk Management 2014 Minor in Risk Management
STAT4606	Risk management and Basel Accords in banking and finance	6	Pass in STAT3910 Financial economics I or STAT3905 Introduction to financial derivatives or STAT3618 Derivatives and risk management or (FINA2322 Derivatives and any University level 3 course).	Y	Y	2	May		Mr P K Y Pang, Statistics & Actuarial Science		2012 Major in Risk Management 2012 Minor in Risk Management 2013 Major in Risk Management 2013 Minor in Risk Management 2014 Major in Risk Management 2014 Minor in Risk Management
STAT4607	Credit risk analysis	6	Pass or already enrolled in STAT3910 Financial economics I or STAT3618 Derivatives and risk management or STAT3905 Introduction to financial derivatives or (FINA2322 Derivatives and any University level 3 course)	Y	Y	2	May		Dr K P Wat, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Minor in Risk Management 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Minor in Risk Management 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 Minor in Risk Management
STAT4608	Market risk analysis	6	(Pass in STAT3907 Linear models and forecasting and STAT3910 Financial economics I); or [Pass in STAT4601 Time-series analysis and (FINA2320 Investments and portfolio analysis or STAT3609 The statistics of investment risk)]	Y	Y	2	May		Dr Z Zhang, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Minor in Risk Management 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Minor in Risk Management 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 Minor in Risk Management
STAT4710	Capstone experience for statistics/risk management undergraduates	6	Students are expected to have satisfactorily completed at least 24 credits advanced level (STAT3XXX, STAT4XXX or STAT6XXX) compulsory/core courses in Risk Management, and Statistics Majors. Students who are interested in taking the course should submit their applications to the Department. This capstone course is for Risk Management, and Statistics Majors students only.	N	Y				Prof W K Li, Statistics & Actuarial Science		

Course Code	Title	Credit	Pre-requisite				Exam held in 2014-2015	Quota	Course Coordinator	(The Major/Minor that this course appears as a required course) Major / Minor	
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Departme	nt of Statistics & Actuarial S	cience ((Cont'd)								
STAT4711	Capstone experience for actuarial science undergraduates		Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including (STAT3901 Life contingencies, or already enrolled in this course; or Pass in STAT3909 Advanced life contingencies, or already enrolled in this course); and This capstone course is for BSc(Actuarial Science) students only.	N	Y				Prof W K Li, Statistics & Actuarial Science		
STAT4766	Statistics internship		Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in the Risk Management, and Statistics Majors. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Risk Management, and Statistics Majors students only.	Y	Y	2, S	No exam		Dr P L H Yu, Statistics & Actuarial Science		
STAT4767	Actuarial science internship		Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including STAT3901 Life contingencies; and This capstone course is for BSc(Actuarial Science) students only.	Y	Y	2	No exam		Dr L F K Ng, Statistics & Actuarial Science		
STAT4798	Statistics and actuarial science project	6	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including STAT3902 Statistical models and STAT3907 Linear models and forecasting; and Pass or already enrolled in at least one of the following courses: STAT3616 Advanced SA5 programming, STAT3911 Financial economics II, STAT4601 Time-series analysis; and This capstone course is for BSc(Actuarial Science) students only.		Y				Prof S M S Lee, Statistics & Actuarial Science		

Course Code	Title	Credit		Available in			Exam held in 2014-2015		Course Coordinator		
										(The Major/Minor that this course appears as a required course)	
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
•	of Statistics & Actuarial So		,	NI.	V			4.5	Drof C.M.C.L.o.		
STA14799	Statistics project		Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in the Major in Risk Management / Statistics including STAT3600 Linear statistical analysis; and Pass or already enrolled in at least one of the following courses: STAT3616 Advanced SAS programming, STAT3911 Financial economics II, STAT4601 Time-series analysis; STAT4602 Multivariate data analysis; and Not for students who have already enrolled in STAT3671 Directed studies in statistics in this academic year. This capstone course is for Risk Management, and Statistics Majors students only.	N	Y			15	Prof S M S Lee, Statistics & Actuarial Science		
STAT4901	Risk theory II		Pass in STAT3906 Risk theory I	Y	Y	2	May		Dr J K Woo, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
STAT4902	Selected topics in actuarial science	6	Pass in STAT3906 Risk theory I	N	N				TBC, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
	Actuarial techniques for general insurance	6	Pass in STAT3906 Risk theory I	N	Y				Dr L F K Ng, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2012 Minor in Actuarial Studies 2013 BSc in Actuarial Science 2013 Minor in Actuarial Studies 2014 BSc in Actuarial Science 2014 Minor in Actuarial Studies
STAT6110	Advanced probability		Pass in STAT3603 Probability modelling or STAT3903 Stochastic models	Y	Y	1	Dec		Prof Y Lam, Statistics & Actuarial Science		
STAT6111	Computational statistics		Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	1	Dec		Dr G Tian, Statistics & Actuarial Science		
STAT6114	Advanced statistical modelling	6	Pass in STAT3600 Linear statistical analysis	Y	Y	2	May		Dr J F Yao, Statistics & Actuarial Science		
	Advanced quantitative risk management and finance	6	Pass in STAT4608 Market risk analysis	N	Y				Prof W K Li, Statistics & Actuarial Science		
STAT7109	Research methods in statistics		Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	1	Dec		Dr J F Yao, Statistics & Actuarial Science		

Course Code	Title	Credit	Pre-requisite	Available in			Exam held in 2014-2015		Course Coordinator	(The Major/Minor that this course appears as a required course) Major / Minor	
						0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
	Core Courses *										
CCCH9020	Science and Technology: Lessons from China	6	NIL	Y	Y	1	Dec	120	Prof L S Chan, Earth Sciences		
CCGL9016	Feeding the World	6	NIL	Y	Y	1	No exam	120	Prof H Corke, Biological Sciences		
CCGL9017	Food: Technology, Trade and Culture	6	NIL	Y	Y	2	May	120	Prof H Corke, Biological Sciences		
CCGL9033	Weapons of Mass Destruction: Science, Proliferation and Terrorism	6	NIL	Y	Y	2	No exam	120	Dr K H Lemke, Earth Sciences		
CCGL9043	Obesity: Beyond a Health Issue	6		Y	Y	2	No exam	120	Dr E T S Li, Biological Sciences		
CCST9011	Biotechnology - Science and Impacts	6	NIL	Y	Y	1	No exam	120	Prof F C C Leung, Biological Sciences		
CCST9012	Our Place in the Universe	6	NIL	Y	Y	2	May	80	Prof S Kwok, Faculty		
CCST9013	Our Living Environment	6	NIL	Y	Y	2	No exam	120	Dr S C Chang, Earth Sciences		
CCST9014	Science and Music	6	NIL	Y	Y	1	No exam	120	Prof H F Chau, Physics		
CCST9017	Hidden Order in Daily Life: A Mathematical Perspective	6	NIL	Y	Y	1	No exam	120	Dr T W Ng, Mathematics		
CCST9018	Origin and Evolution of Life	6	NIL	Y	Y	2	No exam	120	Dr K H Lemke, Earth Sciences		
CCST9019	Understanding Climate Change	6	NIL	Y	Y	2	No exam	120	Dr Z H Liu, Earth Sciences		
CCST9021	Hong Kong: Our Marine Heritage	6	NIL	Y	Y	2	No exam	120	Prof K M Y Leung, Biological Sciences		
CCST9022	How the Mass Media Depicts Science, Technology and the Natural World	6	NIL	Y	Y	2	No exam	120	Prof H F Chau, Physics		
CCST9023	The Oceans: Science and Society	6	NIL	Y	Y	1	No exam	120	Dr S C Chang, Earth Sciences		
CCST9026	Scientific Revolutions and their Impact on Modern Societies	6	NIL	Y	Y	1	No exam	120	Prof K S Cheng, Physics		
CCST9028	Science and Technology: Facts and Fallacies	6	NIL	Y	Y	1	Dec	120	Prof A B Djurisic, Physics		
CCST9030	Forensic Science: Unmasking Evidence, Mysteries and Crimes	6	NIL	Y	Y	1, 2	No exam	120	Prof D L Phillips, Chemistry		
CCST9036	Material World: Past, Present, and Future	6	NIL	Y	Y	2	No exam	120	Prof W K Chan, Chemistry		
CCST9037	Mathematics: A Cultural Heritage	6	NIL	Y	Y	2	No exam	120	Dr N K Tsing, Mathematics		
CCST9038	Science and Science Fiction	6	NIL	Y	Υ	1	No exam	120	Prof A B Djurisic, Physics		
	Statistics and Our Society	6		Y	Y	2	May	120	Dr K C Cheung, Statistics & Actuarial Science		
	Time's Arrow	6		Y	Y	2	May		Dr Y L Li, Earth Sciences		
	The Science and Lore of Culinary Culture	6		Y	Y	2	No exam		Prof G H Chen, Chemistry		
	The Science of Mind-body- health Relationship		NIL	Y	Y	1	Dec		Dr H S El-Nezami, Biological Sciences		
CCST9048	Simplifying Complexity	6	NIL	Y	Y	1	No exam	120	Dr T Bonebrake, Biological Sciences		

^{*} Please refer to http://commoncore.hku.hk for the details of the common core courses.

Equivalency of HKDSE and other qualifications

SCIENCE

SECTION V Equivalency of HKDSE and other qualifications

Table of Equivalence between HKDSE and Other Qualifications

нирсе	Grade	Equivalent Qualification to HKDSE										
HKDSE	Grade	IB	GCE	SATII AP		Gao Kao (高考)						
Biology	3 or above	Biology (SL/HL)	Biology (AL)	Biology	Biology							
Chemistry	3 or above	Chemistry (SL/HL)	Chemistry (AL)	Chemistry	Chemistry							
Physics	3 or above	Physics (SL/HL)	Physics (AL)	Physics	Physics B or C	Equivalent to fulfillment of all						
Mathematics	2 or above	Mathematics (SL)/Mathematical Studies (SL)	Mathematics (AL)	Mathematics Level 1 or 2		HKDSE requirements						
Mathematics + (M1 or M2)	2 or above	Mathematics (HL)/Mathematical Studies (HL)	Pure Mathematics (AL) Further Mathematics (AL)		Calculus AB or BC							

Note:

HL: Higher Level SL: Standard Level AL: Advanced Level

Remarks:

For science students admitted through non-JUPAS scheme, the equivalent subject qualification(s) to HKDSE, if possessed, can be identified by the SIS for on-line course selection.

For other non-science students admitted through non-JUPAS scheme, they are still required to obtain the written approval from the Course Selection Adviser of the course offering department even they have possessed the equivalent HKDSE subject qualification(s) to meet the course prerequisite requirement. Once approval is given, they need to forward it to their home faculties to add the course on-line.

Science Majors on offer in 2014-15

SCIENCE

SECTION VI Science Majors on offer in 2014/15

Majors offered by Science Faculty

Majors (15)

Statistics

Astronomy
Biochemistry
Biological Sciences
Chemistry
Earth System Science
Ecology & Biodiversity
Environmental Science
Food & Nutritional Science
Geology
Mathematics
Mathematics/Physics
Molecular Biology & Biotechnology
Physics
Risk Management

Major Title Major in Astronomy

Offered to students admitted to Year 1 in

2014

Objectives:

The 21st century is the golden age for astronomy as space-based telescopes are being used to explore the Universe in all parts of the electromagnetic spectrum, including X-ray, ultraviolet, and infrared. The Major in Astronomy is intended for the students who would like to acquire a solid foundation on the subject. A large selection of elective courses is provided for students to pursue their interested specialization in the subject, including observational astronomy, planetary science, stellar physics, and interstellar medium. Students will attain professional knowledge in astronomy, research experience and the training of analytical thinking and quantitative reasoning during their studies. In addition to preparing students for postgraduate studies as professional astronomers, astronomy training can lead to local careers in museums, weather services, and the education sectors. Beyond Hong Kong, astronomy graduates have challenging careers in aerospace, communications, energy, and computer industries, as well as in astronomical observatories and space research centers.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe astrophysical phenomena with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle astrophysical problems either theoretical or observational in nature
- (by means of coursework, tutorial classes, and frequent opportunities in field activities in the curriculum)
- (3) analyze astrophysical problems qualitatively and quantitatively, and recognize moral and ethical issues related to the discipline
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Minor in Astronomy

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1250 Fundamental physics (6)

PHYS1650 Nature of the universe (6)

EASC2408 Planetary geology (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3650 Observational astronomy (6)

PHYS3651 The physical universe (6)

PHYS3652 Principles of astronomy (6)

Plus at least 12 credits selected from the following courses:

PHYS4650 Stellar physics (6)

PHYS4651 Selected topics in astrophysics (6)

PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Plus at least 12 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Astronomy

Offered to students

2013

admitted to Year 1 in

Objectives:

The 21st century is the golden age for astronomy as space-based telescopes are being used to explore the Universe in all parts of the electromagnetic spectrum, including X-ray, ultraviolet, and infrared. The Major in Astronomy is intended for the students who would like to acquire a solid foundation on the subject. A large selection of elective courses is provided for students to pursue their interested specialization in the subject, including observational astronomy, planetary science, stellar physics, and interstellar medium. Students will attain professional knowledge in astronomy, research experience and the training of analytical thinking and quantitative reasoning during their studies. In addition to preparing students for postgraduate studies as professional astronomers, astronomy training can lead to local careers in museums, weather services, and the education sectors. Beyond Hong Kong, astronomy graduates have challenging careers in aerospace, communications, energy, and computer industries, as well as in astronomical observatories and space research centers.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe astrophysical phenomena with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle astrophysical problems either theoretical or observational in nature
- (by means of coursework, tutorial classes, and frequent opportunities in field activities in the curriculum)
- (3) analyze astrophysical problems qualitatively and quantitatively, and recognize moral and ethical issues related to the discipline
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Minor in Astronomy

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1250 Fundamental physics (6)

PHYS1650 Nature of the universe (6)

EASC2408 Planetary geology (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3650 Observational astronomy (6)

PHYS3651 The physical universe (6)

PHYS3652 Principles of astronomy (6)

Plus at least 12 credits selected from the following courses:

PHYS4650 Stellar physics (6)

PHYS4651 Selected topics in astrophysics (6)

PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Plus at least 12 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)
PHYS4999 Physics project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Astronomy

Offered to students admitted to Year 1 in

2012

Objectives:

The 21st century is the golden age for astronomy as space-based telescopes are being used to explore the Universe in all parts of the electromagnetic spectrum, including X-ray, ultraviolet, and infrared. The Major in Astronomy is intended for the students who would like to acquire a solid foundation on the subject. A large selection of elective courses is provided for students to pursue their interested specialization in the subject, including observational astronomy, planetary science, stellar physics, and interstellar medium. Students will attain professional knowledge in astronomy, research experience and the training of analytical thinking and quantitative reasoning during their studies. In addition to preparing students for postgraduate studies as professional astronomers, astronomy training can lead to local careers in museums, weather services, and the education sectors. Beyond Hong Kong, astronomy graduates have challenging careers in aerospace, communications, energy, and computer industries, as well as in astronomical observatories and space research centers.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe astrophysical phenomena with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle astrophysical problems either theoretical or observational in nature
- (by means of coursework, tutorial classes, and frequent opportunities in field activities in the curriculum)
- (3) analyze astrophysical problems qualitatively and quantitatively, and recognize moral and ethical issues related to the discipline
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Minor in Astronomy

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1250 Fundamental physics (6)

PHYS1650 Nature of the universe (6)

EASC2408 Planetary geology (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3650 Observational astronomy (6)

PHYS3651 The physical universe (6)

PHYS3652 Principles of astronomy (6)

Plus at least 12 credits selected from the following courses:

PHYS4650 Stellar physics (6)

PHYS4651 Selected topics in astrophysics (6)

PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Plus at least 12 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Major Title Major in Biochemistry

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Biochemistry aims to provide students with both basic and advanced knowledge in contemporary biochemistry and molecular biology. Core courses in the curriculum emphasize equipping students with a general understanding of the fundamental ideas, principles and theories of biochemistry with particular focus on the relevance of biochemistry, molecular biology and genomics to biology, human health and disease. Elective courses extend this core knowledge to provide students with specialized insight into both basic and applied scientific endeavour in biochemistry, bioinformatics, molecular biology and molecular genetics. Throughout the curriculum there is an emphasis on experiential learning through laboratory practicals, problem-solving exercises, group-based learning, industrial experience, overseas exchange and research-based projects. These experiences are designed to develop students' ability to read and interpret scientific data, to integrate knowledge with wider scientific theory, and to improve logical thinking and communication skills. The ultimate goal is to provide a comprehensive degree-level biochemistry education that equips students with the critical thinking, communication and analytical skills essential for them to play a leading role in society in the future.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the principles of biomolecular structure, metabolism, molecular interactions, molecular processes and their regulation, genetics and systems biology critical to contemporary biochemistry and molecular biology (by means of coursework and experiential learning)
- (2) apply biochemical, bioinformatics and molecular genetics technologies for new observations, measurements and analyses; and to design experiments that bring discovery and insight into the unknown (by means of laboratory-based and research project-based learning)
- (3) interpret and communicate scientific data and literature using appropriate scientific language
- (by means of literature-based coursework and debate)
- (4) work effectively as a team and synergize with their colleagues in a supportive manner
- (by means of group-based learning and by group-based problem solving)
- (5) recognize the interconnections of biochemistry with other disciplines in science, medicine and engineering, humanities and ethics, which are relevant for diverse working environment in the society (by means of multidisciplinary-based research projects, internship and debate)

Impermissible Combination:

Minor in Biochemistry

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOC1600 Perspectives in biochemistry (6)

BIOL1110 From molecules to cells (6)

CHEM1042 General chemistry I (6)

BIOC2600 Basic biochemistry (6)

CHEM2441 Organic chemistry I (6)

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (42 credits)

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOL3401 Molecular biology (6)

BIOC4610 Advanced biochemistry (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

Plus at least 12 credits selected from the following courses:

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3408 Genetics (6)

CHEM3441 Organic chemistry II (6)

BIOC4612 Molecular biology of the gene (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4145 Medicinal chemistry (6)

CHEM4444 Chemical biology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOC3999 Directed studies in biochemistry (6)

BIOC4966 Biochemistry internship (6)

BIOC4999 Biochemistry project (12)

Notes

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Biochemistry

Offered to students admitted to Year 1 in

2013

Objectives:

The Major in Biochemistry aims to provide students with both basic and advanced knowledge in contemporary biochemistry and molecular biology. Core courses in the curriculum emphasize equipping students with a general understanding of the fundamental ideas, principles and theories of biochemistry with particular focus on the relevance of biochemistry, molecular biology and genomics to biology, human health and disease. Elective courses extend this core knowledge to provide students with specialized insight into both basic and applied scientific endeavour in biochemistry, bioinformatics, molecular biology and molecular genetics. Throughout the curriculum there is an emphasis on experiential learning through laboratory practicals, problem-solving exercises, group-based learning, industrial experience, overseas exchange and research-based projects. These experiences are designed to develop students' ability to read and interpret scientific data, to integrate knowledge with wider scientific theory, and to improve logical thinking and communication skills. The ultimate goal is to provide a comprehensive degree-level biochemistry education that equips students with the critical thinking, communication and analytical skills essential for them to play a leading role in society in the future.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the principles of biomolecular structure, metabolism, molecular interactions, molecular processes and their regulation, genetics and systems biology critical to contemporary biochemistry and molecular biology (by means of coursework and experiential learning)
- (2) apply biochemical, bioinformatics and molecular genetics technologies for new observations, measurements and analyses; and to design experiments that bring discovery and insight into the unknown (by means of laboratory-based and research project-based learning)
- (3) interpret and communicate scientific data and literature using appropriate scientific language
- (by means of literature-based coursework and debate)
- (4) work effectively as a team and synergize with their colleagues in a supportive manner
- (by means of group-based learning and by group-based problem solving)
- (5) recognize the interconnections of biochemistry with other disciplines in science, medicine and engineering, humanities and ethics, which are relevant for diverse working environment in the society (by means of multidisciplinary-based research projects, internship and debate)

Impermissible Combination:

Minor in Biochemistry

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOC1600 Perspectives in biochemistry (6)

BIOL1110 From molecules to cells (6)

CHEM1042 General chemistry I (6)

BIOC2600 Basic biochemistry (6)

CHEM2441 Organic chemistry I (6)

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (42 credits)

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOL3401 Molecular biology (6)

BIOC4610 Advanced biochemistry (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

Plus at least 12 credits selected from the following courses:

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3408 Genetics (6)

CHEM3441 Organic chemistry II (6)

BIOC4612 Molecular biology of the gene (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4145 Medicinal chemistry (6)

CHEM4444 Chemical biology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOC3999 Directed studies in biochemistry (6)

BIOC4966 Biochemistry internship (6)

BIOC4999 Biochemistry project (12)

Notes

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Biochemistry

Offered to students admitted to Year 1 in

2012

Objectives:

The Major in Biochemistry aims to provide students with both basic and advanced knowledge in contemporary biochemistry and molecular biology. Core courses in the curriculum emphasize equipping students with a general understanding of the fundamental ideas, principles and theories of biochemistry with particular focus on the relevance of biochemistry, molecular biology and genomics to biology, human health and disease. Elective courses extend this core knowledge to provide students with specialized insight into both basic and applied scientific endeavour in biochemistry, bioinformatics, molecular biology and molecular genetics. Throughout the curriculum there is an emphasis on experiential learning through laboratory practicals, problem-solving exercises, group-based learning, industrial experience, overseas exchange and research-based projects. These experiences are designed to develop students' ability to read and interpret scientific data, to integrate knowledge with wider scientific theory, and to improve logical thinking and communication skills. The ultimate goal is to provide a comprehensive degree-level biochemistry education that equips students with the critical thinking, communication and analytical skills essential for them to play a leading role in society in the future.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the principles of biomolecular structure, metabolism, molecular interactions, molecular processes and their regulation, genetics and systems biology critical to contemporary biochemistry and molecular biology (by means of coursework and experiential learning)
- (2) apply biochemical, bioinformatics and molecular genetics technologies for new observations, measurements and analyses; and to design experiments that bring discovery and insight into the unknown (by means of laboratory-based and research project-based learning)
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- (by means of group-based learning and by group-based problem solving)
- (5) recognize the interconnections of biochemistry with other disciplines in science, medicine and engineering, humanities and ethics, which are relevant for diverse working environment in the society (by means of multidisciplinary-based research projects, internship and debate)

Impermissible Combination:

Minor in Biochemistry

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOC1600 Perspectives in biochemistry (6)

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CHEM1042 General chemistry I (6)

BIOC2600 Basic biochemistry (6)

CHEM2441 Organic chemistry I (6)

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2. Advanced level courses (42 credits)

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOL3401 Molecular biology (6)

BIOC4610 Advanced biochemistry (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

Plus at least 12 credits selected from the following courses:

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3408 Genetics (6)

CHEM3441 Organic chemistry II (6)

BIOC4612 Molecular biology of the gene (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4145 Medicinal chemistry (6)

CHEM4444 Chemical biology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOC3999 Directed studies in biochemistry (6)

BIOC4966 Biochemistry internship (6)

BIOC4999 Biochemistry project (12)

Notes

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Biological Sciences

Offered to students

admitted to Year 1 in

2014

Objectives:

This Major is designed for students seeking a broad-based training in modern biology. Students are guided in an inquiry-driven learning environment to appreciate the major biological systems at different levels of biological organization. Teaching emphasizes both core concepts and applied aspects in biological sciences. The programme is highly flexible as students can select courses according to their own interests from a wide spectrum of elective courses. At the advanced level, students are further allowed to specialize in areas such as microbiology, genetics & cytology, physiology & homeostasis, or diversity of life & environmental biology and undertake experiential learning activities. The diverse learning experience exposes students to problem-based learning, and an exciting array of laboratory and field techniques. Students will also be able to acquire valuable transferable skills in analysis, organization and communication. The Biological Sciences Major applies modern scientific inquiry to prepare graduates for employment as professionals in a variety of careers or for postgraduate study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand concepts underpinning advances in cell biology and genetics, physiology and systems biology, diversity of life and environmental biology, and applied biology
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) evaluate diverse threads of enquiry in science, and identify the value of datasets and written output
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) interpret scientific data from a range of sources and explain trends observed
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) demonstrate independent and critical thinking and appreciate moral and ethical issues related to biological sciences
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) communicate in a professional capacity with educators, business, media and the scientific community
- (by means of coursework, tutorial classes, project-based and presentation opportunities in the curriculum)
- (6) be prepared to enter employment as professional scientists, educators and managers
- (by means of coursework, tutorial classes, laboratory-based, project-based and capstone learning in the curriculum)

Impermissible Combination:

NIL

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1111 Introductory microbiology (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (at least 42 credits)

Students must select at least 1 course from each of the following area A, B, C & D:

(A) Genetics and cell biology

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)
BIOL3408 Genetics (6)

(B) Physiology and systems biology

BIOL3105 Animal physiology and environmental adaptation (6)

BIOL3107 Plant physiology (6)
BIOL3108 Microbial physiology (6)

BIOL3205 Human physiology (6)

(C) Diversity of life and environmental biology

BIOL3109 Environmental microbiology (6)
BIOL3110 Environmental toxicology (6)

BIOL3301 Marine biology (6)

BIOL3302 Systematics and phylogenetics (6)

(D) Applied biology

BIOL3303 Conservation ecology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4301 Fish and fisheries (6)

BIOL4401 Medical microbiology and applied immunology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3994 Directed studies in biological sciences (6)

BIOL4964 Biological sciences internship (6)
BIOL4994 Biological sciences project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Major Title Major in Biological Sciences

Offered to students

admitted to Year 1 in

2013

Objectives:

This Major is designed for students seeking a broad-based training in modern biology. Students are guided in an inquiry-driven learning environment to appreciate the major biological systems at different levels of biological organization. Teaching emphasizes both core concepts and applied aspects in biological sciences. The programme is highly flexible as students can select courses according to their own interests from a wide spectrum of elective courses. At the advanced level, students are further allowed to specialize in areas such as microbiology, genetics & cytology, physiology & homeostasis, or diversity of life & environmental biology and undertake experiential learning activities. The diverse learning experience exposes students to problem-based learning, and an exciting array of laboratory and field techniques. Students will also be able to acquire valuable transferable skills in analysis, organization and communication. The Biological Sciences Major applies modern scientific inquiry to prepare graduates for employment as professionals in a variety of careers or for postgraduate study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand concepts underpinning advances in cell biology and genetics, physiology and systems biology, diversity of life and environmental biology, and applied biology
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) evaluate diverse threads of enquiry in science, and identify the value of datasets and written output
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) interpret scientific data from a range of sources and explain trends observed
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) demonstrate independent and critical thinking and appreciate moral and ethical issues related to biological sciences
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) communicate in a professional capacity with educators, business, media and the scientific community
- (by means of coursework, tutorial classes, project-based and presentation opportunities in the curriculum)
- (6) be prepared to enter employment as professional scientists, educators and managers
- (by means of coursework, tutorial classes, laboratory-based, project-based and capstone learning in the curriculum)

Impermissible Combination:

NII.

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1111 Introductory microbiology (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (at least 42 credits)

Students must select at least 1 course from each of the following area A, B, C & D:

(A) Genetics and cell biology

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)
BIOL3408 Genetics (6)

(B) Physiology and systems biology

BIOL3105 Animal physiology and environmental adaptation (6)

BIOL3107 Plant physiology (6)
BIOL3108 Microbial physiology (6)

BIOL3205 Human physiology (6)

(C) Diversity of life and environmental biology

BIOL3109 Environmental microbiology (6)
BIOL3110 Environmental toxicology (6)

BIOL3301 Marine biology (6)

BIOL3302 Systematics and phylogenetics (6)

(D) Applied biology

BIOL3303 Conservation ecology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4301 Fish and fisheries (6)

BIOL4401 Medical microbiology and applied immunology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3994 Directed studies in biological sciences (6)

BIOL4964 Biological sciences internship (6)
BIOL4994 Biological sciences project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Major Title Major in Biological Sciences

Offered to students

admitted to Year 1 in

2012

Objectives:

This Major is designed for students seeking a broad-based training in modern biology. Students are guided in an inquiry-driven learning environment to appreciate the major biological systems at different levels of biological organization. Teaching emphasizes both core concepts and applied aspects in biological sciences. The programme is highly flexible as students can select courses according to their own interests from a wide spectrum of elective courses. At the advanced level, students are further allowed to specialize in areas such as microbiology, genetics & cytology, physiology & homeostasis, or diversity of life & environmental biology and undertake experiential learning activities. The diverse learning experience exposes students to problem-based learning, and an exciting array of laboratory and field techniques. Students will also be able to acquire valuable transferable skills in analysis, organization and communication. The Biological Sciences Major applies modern scientific inquiry to prepare graduates for employment as professionals in a variety of careers or for postgraduate study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand concepts underpinning advances in cell biology and genetics, physiology and systems biology, diversity of life and environmental biology, and applied biology
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) evaluate diverse threads of enquiry in science, and identify the value of datasets and written output
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) interpret scientific data from a range of sources and explain trends observed
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) demonstrate independent and critical thinking and appreciate moral and ethical issues related to biological sciences
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) communicate in a professional capacity with educators, business, media and the scientific community
- (by means of coursework, tutorial classes, project-based and presentation opportunities in the curriculum)
- (6) be prepared to enter employment as professional scientists, educators and managers
- (by means of coursework, tutorial classes, laboratory-based, project-based and capstone learning in the curriculum)

Impermissible Combination:

NIL

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1111 Introductory microbiology (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (at least 42 credits)

Students must select at least 1 course from each of the following area A, B, C & D:

(A) Genetics and cell biology

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)
BIOL3408 Genetics (6)

(B) Physiology and systems biology

BIOL3105 Animal physiology and environmental adaptation (6)

BIOL3107 Plant physiology (6)
BIOL3108 Microbial physiology (6)

BIOL3205 Human physiology (6)

(C) Diversity of life and environmental biology

BIOL3109 Environmental microbiology (6)
BIOL3110 Environmental toxicology (6)

BIOL3301 Marine biology (6)

BIOL3302 Systematics and phylogenetics (6)

(D) Applied biology

BIOL3303 Conservation ecology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4301 Fish and fisheries (6)

BIOL4401 Medical microbiology and applied immunology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3994 Directed studies in biological sciences (6)

BIOL4964 Biological sciences internship (6)

BIOL4994 Biological sciences project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Major Title Major in Chemistry

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Chemistry aims to provide students with a solid training in major areas of chemistry. The curriculum includes core courses covering topics in physical, inorganic, organic, and analytical chemistry. A wide selection of elective courses in chemical biology, chemical analysis, computational chemistry, environmental chemistry, industrial chemistry, interfacial science, material, and medicinal chemistry, is also available to provide students with knowledge and training to help them meet the dynamic and ever-changing challenges in science and technology. Graduates of the Chemistry Major programme will be proficient in the principles and experimental skills of chemistry. The programme will also equip students with transferable skills in both theoretical and experimental investigations in sciences that are crucial for their future careers in a knowledge-based economy. It is expected that our graduates will be able to meet local and regional requirements in the industrial, commercial, government or education sectors and will become future leaders of these sectors.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate an understanding across a wide range of topics in chemistry, from basic areas such as analytical, inorganic, organic & physical chemistry, to advanced topics related to current research in chemistry
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (2) demonstrate an in-depth understanding of fundamental physicochemical principles with the ability to apply that knowledge to the solution of theoretical & practical problems
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (3) have developed an awareness & understanding of scientific and ethical issues where chemistry relates to other disciplines, and an appreciation of the impact of chemistry in the modern world
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (4) have substantially developed advanced experimental skills including chemical synthesis, analysis & operation of modern instrumentation, and data analysis skills with the ability to interpret experimental information & infer appropriate conclusions
- (by requiring of no less than 100 hours of laboratory classes in the curriculum)
- (5) demonstrate problem-solving skills, critical thinking, creativity & effective written & oral communication skills, and to co-operate with other people & participate as an effective team member
- (by means of coursework, laboratory-based learning, group project & presentation opportunities in the curriculum)
- (6) gain experience in working in the real-life industrial or research environment, and enhance their initiative, interpersonal skills, time management skills & project organization skills
- (by arrangement for student internship opportunities or directed studies of no less than three weeks with chemistry-related companies or research laboratories)

Impermissible Combination:

Minor in Chemistry

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science

(6)

Disciplinary Courses (30 credits)

CHEM1042 General chemistry I (6)

CHEM2241 Analytical chemistry I (6)

CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6)

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (48 credits)

CHEM3146 Principles and applications of

spectroscopic and analytical

techniques (6)

CHEM3241 Analytical chemistry II: chemical

instrumentation (6)

CHEM3341 Inorganic chemistry II (6)

CHEM3441 Organic chemistry II (6)

CHEM3541 Physical chemistry: Introduction to

quantum chemistry (6)

Plus at least 12 credits selected from the following 18 credits of courses in two different areas:

CHEM4341 Advanced inorganic chemistry (6)

CHEM4441 Advanced organic chemistry (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4443 Integrated organic synthesis (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4541 Physical chemistry III: statistical

thermodynamics and kinetics

theory (6)

Plus at least 6 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level, excluding CHEM3999 Directed studies in chemistry, CHEM4910 Chemistry literacy and research, CHEM4911 Capstone experience for chemistry undergraduates: HKUtopia and CHEM4966 Chemistry internship), subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

CHEM3999 Directed studies in chemistry (6)

CHEM4910 Chemistry literacy and research (6)

CHEM4911 Capstone experience for chemistry

undergraduates: HKUtopia (6)

CHEM4966 Chemistry internship (6)

CHEM4999 Chemistry project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Chemistry

Offered to students admitted to Year 1 in

2013

Objectives:

The Major in Chemistry aims to provide students with a solid training in major areas of chemistry. The curriculum includes core courses covering topics in physical, inorganic, organic, and analytical chemistry. A wide selection of elective courses in chemical biology, chemical analysis, computational chemistry, environmental chemistry, industrial chemistry, interfacial science, material, and medicinal chemistry, is also available to provide students with knowledge and training to help them meet the dynamic and ever-changing challenges in science and technology. Graduates of the Chemistry Major programme will be proficient in the principles and experimental skills of chemistry. The programme will also equip students with transferable skills in both theoretical and experimental investigations in sciences that are crucial for their future careers in a knowledge-based economy. It is expected that our graduates will be able to meet local and regional requirements in the industrial, commercial, government or education sectors and will become future leaders of these sectors.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate an understanding across a wide range of topics in chemistry, from basic areas such as analytical, inorganic, organic & physical chemistry, to advanced topics related to current research in chemistry
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (2) demonstrate an in-depth understanding of fundamental physicochemical principles with the ability to apply that knowledge to the solution of theoretical & practical problems
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (3) have developed an awareness & understanding of scientific and ethical issues where chemistry relates to other disciplines, and an appreciation of the impact of chemistry in the modern world
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (4) have substantially developed advanced experimental skills including chemical synthesis, analysis & operation of modern instrumentation, and data analysis skills with the ability to interpret experimental information & infer appropriate conclusions
- (by requiring of no less than 100 hours of laboratory classes in the curriculum)
- (5) demonstrate problem-solving skills, critical thinking, creativity & effective written & oral communication skills, and to co-operate with other people & participate as an effective team member
- (by means of coursework, laboratory-based learning, group project & presentation opportunities in the curriculum)
- (6) gain experience in working in the real-life industrial or research environment, and enhance their initiative, interpersonal skills, time management skills & project organization skills
- (by arrangement for student internship opportunities or directed studies of no less than three weeks with chemistry-related companies or research laboratories)

Impermissible Combination:

Minor in Chemistry

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science

(6)

Disciplinary Courses (30 credits)

CHEM1042 General chemistry I (6)

CHEM2241 Analytical chemistry I (6)

CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6)

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (48 credits)

CHEM3146 Principles and applications of

spectroscopic and analytical

techniques (6)

CHEM3241 Analytical chemistry II: chemical

instrumentation (6)

CHEM3341 Inorganic chemistry II (6)

CHEM3441 Organic chemistry II (6)

CHEM3541 Physical chemistry: Introduction to

quantum chemistry (6)

Plus at least 12 credits selected from the following 18 credits of courses in two different areas:

CHEM4341 Advanced inorganic chemistry (6)

CHEM4441 Advanced organic chemistry (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4443 Integrated organic synthesis (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4541 Physical chemistry III: statistical

thermodynamics and kinetics

theory (6)

Plus at least 6 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level, excluding CHEM3999 Directed studies in chemistry, CHEM4910 Chemistry literacy and research, CHEM4911 Capstone experience for chemistry undergraduates: HKUtopia and CHEM4966 Chemistry internship), subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

CHEM3999 Directed studies in chemistry (6)

CHEM4910 Chemistry literacy and research (6)

CHEM4911 Capstone experience for chemistry

undergraduates: HKUtopia (6)

CHEM4966 Chemistry internship (6)

CHEM4999 Chemistry project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Chemistry

Offered to students admitted to Year 1 in

2012

Objectives:

The Major in Chemistry aims to provide students with a solid training in major areas of chemistry. The curriculum includes core courses covering topics in physical, inorganic, organic, and analytical chemistry. A wide selection of elective courses in chemical biology, chemical analysis, computational chemistry, environmental chemistry, industrial chemistry, interfacial science, material, and medicinal chemistry, is also available to provide students with knowledge and training to help them meet the dynamic and ever-changing challenges in science and technology. Graduates of the Chemistry Major programme will be proficient in the principles and experimental skills of chemistry. The programme will also equip students with transferable skills in both theoretical and experimental investigations in sciences that are crucial for their future careers in a knowledge-based economy. It is expected that our graduates will be able to meet local and regional requirements in the industrial, commercial, government or education sectors and will become future leaders of these sectors.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate an understanding across a wide range of topics in chemistry, from basic areas such as analytical, inorganic, organic & physical chemistry, to advanced topics related to current research in chemistry
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (2) demonstrate an in-depth understanding of fundamental physicochemical principles with the ability to apply that knowledge to the solution of theoretical & practical problems
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (3) have developed an awareness & understanding of scientific and ethical issues where chemistry relates to other disciplines, and an appreciation of the impact of chemistry in the modern world
- (by means of coursework, laboratory-based and/or research-based learning in the curriculum)
- (4) have substantially developed advanced experimental skills including chemical synthesis, analysis & operation of modern instrumentation, and data analysis skills with the ability to interpret experimental information & infer appropriate conclusions
- (by requiring of no less than 100 hours of laboratory classes in the curriculum)
- (5) demonstrate problem-solving skills, critical thinking, creativity & effective written & oral communication skills, and to co-operate with other people & participate as an effective team member
- (by means of coursework, laboratory-based learning, group project & presentation opportunities in the curriculum)
- (6) gain experience in working in the real-life industrial or research environment, and enhance their initiative, interpersonal skills, time management skills & project organization skills
- (by arrangement for student internship opportunities or directed studies of no less than three weeks with chemistry-related companies or research laboratories)

Impermissible Combination:

Minor in Chemistry

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science

(6)

Disciplinary Courses (30 credits)

CHEM1042 General chemistry I (6)

CHEM2241 Analytical chemistry I (6)

CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6)

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (48 credits)

CHEM3146 Principles and applications of

spectroscopic and analytical

techniques (6)

CHEM3241 Analytical chemistry II: chemical

instrumentation (6)

CHEM3341 Inorganic chemistry II (6)

CHEM3441 Organic chemistry II (6)

CHEM3541 Physical chemistry: Introduction to

quantum chemistry (6)

Plus at least 12 credits selected from the following 18 credits of courses in two different areas:

CHEM4341 Advanced inorganic chemistry (6)

CHEM4441 Advanced organic chemistry (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4443 Integrated organic synthesis (6) May take either CHEM4443 or CHEM4441 to

fulfill this 12 credits requirement, but not both.

CHEM4541 Physical chemistry III: statistical

thermodynamics and kinetics

theory (6)

Plus at least 6 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level, excluding CHEM3999 Directed studies in chemistry, CHEM4910 Chemistry literacy and research, CHEM4911 Capstone experience for chemistry undergraduates: HKUtopia and CHEM4966 Chemistry internship), subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

CHEM3999 Directed studies in chemistry (6)

CHEM4910 Chemistry literacy and research (6)

CHEM4911 Capstone experience for chemistry

undergraduates: HKUtopia (6)

CHEM4966 Chemistry internship (6)

CHEM4999 Chemistry project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fulfill this requirement are advised to take CHEM1041 Foundations of chemistry.

Major Title Major in Earth System Science

Offered to students admitted to Year 1 in

2014

Objectives:

Earth System Science seeks to understand the Earth as an integrated system, including its past, present and future behaviour, from the environments where life evolves on the surface to the interactions between the crust and its fluid envelopes (atmosphere and hydrosphere), with interests extending to the Earth's interior. Core courses in the major focus on understanding the composition, structure and processes of the solid earth, the hydrosphere and the atmosphere, and their interactions. Students will be equipped with knowledge to help manage geological resources and natural hazards. Throughout the curriculum there is consistent emphasis on transferable skills, learning through fieldwork, laboratory studies and research based classes, designed to enhance students' ability to think critically, to communicate effectively and to develop solutions to complex problems. Graduates from the major can pursue further studies in the Earth Sciences and careers in a wide variety of geoscience-related areas including resource management, hazard mitigation, soil and water conservation and teaching.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the key concepts of the Earth System components and processes
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) have acquired the ability to observe, describe, measure and analyze principal phenomena of earth processes and the interactions between different earth components
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) provide expertise to maintain geological environments and prevent severe perturbations due to resource exploitation and water disposal
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) equip with the knowledge and skills to better predict and deal with geological and related hazards such as earthquakes, landslides, tsunamis, floods and volcanic eruptions, and recognize and appraise the related ethical
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) identify real life problems pertaining to the physical environment and find solutions to those problems

Fundamentals of modern science (6)

- (by means capstone learning experience in the form of internship, field learning, and project-based learning in the curriculum)
- (6) work with other students and possess an adequate level of communication skills
- (by means of group project learning and presentation opportunities in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

SCNC1112

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

Disciplinary Courses (36 credits)

BIOL1309 Evolutionary diversity (6)

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

2. Advanced level courses (42 credits)

EASC4403 Biogeochemical cycles (6)

Plus at least 36 credits from Lists A and B, among which at least 12 credits from List A.

List A:

EASC3415

EASC3410 Hydrogeology (6)

ENVS3313 Environmental oceanography (6)

Meteorology (6)

List B:

EASC3403 Sedimentary environments (6)

EASC3405 Environmental remote sensing (6)

EASC3406 Reconstruction of past climate (6)

EASC3408 Geophysics (6)

EASC3412 Earth resources (6)

EASC3416 Advanced geochemistry and geochronology (6)

EASC3999 Directed studies in earth sciences (6)

ENVS3007 Natural hazards and mitigation (6)

EASC4408 Special topics in earth sciences (6)

EASC4999 Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4911 Earth system: contemporary issues (6)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students are recommended to take additional chemistry and/or physics courses above the introductory level if they are interested in postgraduate research in Earth System Science.

Remarks

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Earth System Science

Offered to students

admitted to Year 1 in

2013

Objectives:

Earth System Science seeks to understand the Earth as an integrated system, including its past, present and future behaviour, from the environments where life evolves on the surface to the interactions between the crust and its fluid envelopes (atmosphere and hydrosphere), with interests extending to the Earth's interior. Core courses in the major focus on understanding the composition, structure and processes of the solid earth, the hydrosphere and the atmosphere, and their interactions. Students will be equipped with knowledge to help manage geological resources and natural hazards. Throughout the curriculum there is consistent emphasis on transferable skills, learning through fieldwork, laboratory studies and research based classes, designed to enhance students' ability to think critically, to communicate effectively and to develop solutions to complex problems. Graduates from the major can pursue further studies in the Earth Sciences and careers in a wide variety of geoscience-related areas including resource management, hazard mitigation, soil and water conservation and teaching.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the key concepts of the Earth System components and processes
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) have acquired the ability to observe, describe, measure and analyze principal phenomena of earth processes and the interactions between different earth components
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) provide expertise to maintain geological environments and prevent severe perturbations due to resource exploitation and water disposal
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) equip with the knowledge and skills to better predict and deal with geological and related hazards such as earthquakes, landslides, tsunamis, floods and volcanic eruptions, and recognize and appraise the related ethical
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) identify real life problems pertaining to the physical environment and find solutions to those problems
- (by means capstone learning experience in the form of internship, field learning, and project-based learning in the curriculum)
- (6) work with other students and possess an adequate level of communication skills
- (by means of group project learning and presentation opportunities in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1309 Evolutionary diversity (6)

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

2. Advanced level courses (42 credits)

EASC4403 Biogeochemical cycles (6)

Plus at least 36 credits from Lists A and B, among which at least 12 credits from List A.

List A:

EASC3415

EASC3410 Hydrogeology (6)

ENVS3313 Environmental oceanography (6)

Meteorology (6)

List B:

EASC3403 Sedimentary environments (6)

EASC3405 Environmental remote sensing (6)

EASC3406 Reconstruction of past climate (6)

EASC3408 Geophysics (6)

EASC3412 Earth resources (6)

EASC3416 Advanced geochemistry and geochronology (6)

EASC3999 Directed studies in earth sciences (6)

ENVS3007 Natural hazards and mitigation (6)

EASC4408 Special topics in earth sciences (6)

EASC4999 Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4911 Earth system: contemporary issues (6)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students are recommended to take additional chemistry and/or physics courses above the introductory level if they are interested in postgraduate research in Earth System Science.

Remarks

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Earth System Science

Offered to students admitted to Year 1 in

2012

Objectives:

Earth System Science seeks to understand the Earth as an integrated system, including its past, present and future behaviour, from the environments where life evolves on the surface to the interactions between the crust and its fluid envelopes (atmosphere and hydrosphere), with interests extending to the Earth's interior. Core courses in the major focus on understanding the composition, structure and processes of the solid earth, the hydrosphere and the atmosphere, and their interactions. Students will be equipped with knowledge to help manage geological resources and natural hazards. Throughout the curriculum there is consistent emphasis on transferable skills, learning through fieldwork, laboratory studies and research based classes, designed to enhance students' ability to think critically, to communicate effectively and to develop solutions to complex problems. Graduates from the major can pursue further studies in the Earth Sciences and careers in a wide variety of geoscience-related areas including resource management, hazard mitigation, soil and water conservation and teaching.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the key concepts of the Earth System components and processes
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) have acquired the ability to observe, describe, measure and analyze principal phenomena of earth processes and the interactions between different earth components
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) provide expertise to maintain geological environments and prevent severe perturbations due to resource exploitation and water disposal
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- (4) equip with the knowledge and skills to better predict and deal with geological and related hazards such as earthquakes, landslides, tsunamis, floods and volcanic eruptions, and recognize and appraise the related ethical
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) identify real life problems pertaining to the physical environment and find solutions to those problems
- (by means capstone learning experience in the form of internship, field learning, and project-based learning in the curriculum)
- (6) work with other students and possess an adequate level of communication skills
- (by means of group project learning and presentation opportunities in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1309 Evolutionary diversity (6)

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

2. Advanced level courses (42 credits)

EASC4403 Biogeochemical cycles (6)

Plus at least 36 credits from Lists A and B, among which at least 12 credits from List A.

List A:

EASC3410 Hydrogeology (6)

EASC3415 Meteorology (6)

ENVS3313 Environmental oceanography (6)

List B:

EASC3403 Sedimentary environments (6)

EASC3405 Environmental remote sensing (6)

EASC3406 Reconstruction of past climate (6)

EASC3408 Geophysics (6)

EASC3412 Earth resources (6)

EASC3416 Advanced geochemistry and geochronology (6)

EASC3999 Directed studies in earth sciences (6)

ENVS3007 Natural hazards and mitigation (6)

EASC4408 Special topics in earth sciences (6)

EASC4999 Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4911 Earth system: contemporary issues (6)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students are recommended to take additional chemistry and/or physics courses above the introductory level if they are interested in postgraduate research in Earth System Science.

Remarks

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2014

Objectives:

This major is directed at teaching students: (1) how organisms interact with each other and their environments, (2) how species are distributed throughout the world, and (3) key threats and approaches to conserving biodiversity. Special reference is made to Hong Kong and Asia; the ways in which humans have impacted upon natural environments; and, the approaches used to manage or ameliorate those impacts. This major is based around an introductory core, which emphasizes plant and animal biology and includes a compulsory week-long residential field trip. Advanced courses in the major teach students about the ecology and biodiversity of different ecosystems (e.g. marine, terrestrial and freshwater environments) with an emphasis on field work, introduces the use of statistical and molecular techniques in ecology, and focuses on certain applied topics such as environmental impact assessment, ecotoxicology, fisheries and mariculture, and biodiversity conservation. Students have an opportunity to conduct independent research in ecology and biodiversity as a final year project or a dissertation under the close supervision of an individual staff member. Apart from the fundamental knowledge and skills in understanding and managing biodiversity offered in the core courses of this major, strong emphasis is placed upon experiential learning such as overseas field expedition and work placement in the environmental sector. Biodiversity conservation requires scientific input as well as passion. Through the range of formal field-based courses as well as extra-curricular activities offered, students taking this major will have opportunities to participate in research, field conservation and education projects both locally and internationally. Assistance will be provided so that students can develop expertise in one or a few groups of plants or animals, as familiarity with species identification is an essential prerequisite for biodiversity scientists or conservation biologists.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and appreciate the major living and non-living components of the regional and global environment, and how they interact; identify threats to them; and know how these threats can be mitigated
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (2) understand and appreciate the variety of life in Hong Kong's and Southeast Asia's natural habitats, become equipped to understand, study, manage and protect that diversity, and appraise the related moral and ethical issues
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (3) have sufficient experience of the basic techniques of modern ecological science and prepare to learn new ones for specific tasks
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (4) use IT tools appropriately, and access and evaluate materials from libraries, archives and the Internet
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (5) demonstrate original, independent and critical thinking, with mastery of a range of communication skills
- (by means of coursework, project-based and presentation opportunities in the curriculum)
- (6) have the skill and knowledge to pursue postgraduate ecological research or to develop a career in nature conservation and environmental education, especially in Hong Kong and southern China
- (by means of coursework, tutorial classes, project-based and research-based learning in the curriculum)
- (7) be motivated and sufficiently equipped to apply the knowledge solve local, regional and global environmental problems

(by means of coursework, laboratory-based, tutorial classes, capstone learning and/or project-based learning in the curriculum)

Impermissible Combination:

Minor in Ecology & Biodiversity

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (42 credits)

BIOL3302 Systematics and phylogenetics (6)

BIOL3303 Conservation ecology (6)

Plus at least 30 credits selected from the following courses:

BIOL3109 Environmental microbiology (6)

BIOL3301 Marine biology (6)

BIOL3313 Freshwater ecology (6)

BIOL3314 Plant structure and evolution (6)

BIOL3318 Experimental intertidal ecology (6)

BIOL3319 Terrestrial ecology (6)

BIOL3320 The biology of marine mammals (6)

ENVS3019 Urban ecology (6)

BIOL4301 Fish and fisheries (6)

BIOL4302 Environmental impact assessment (6)

BIOL4303 Animal behaviour (6)

BIOL4861 Ecology & biodiversity internship (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3951 Ecology & biodiversity field course (6)

BIOL3991 Directed studies in ecology & biodiversity (6)

BIOL4911 Conservation science in practice (6)

BIOL4991 Ecology & biodiversity project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major

disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2013

Objectives:

This major is directed at teaching students: (1) how organisms interact with each other and their environments, (2) how species are distributed throughout the world, and (3) key threats and approaches to conserving biodiversity. Special reference is made to Hong Kong and Asia; the ways in which humans have impacted upon natural environments; and, the approaches used to manage or ameliorate those impacts. This major is based around an introductory core, which emphasizes plant and animal biology and includes a compulsory week-long residential field trip. Advanced courses in the major teach students about the ecology and biodiversity of different ecosystems (e.g. marine, terrestrial and freshwater environments) with an emphasis on field work, introduces the use of statistical and molecular techniques in ecology, and focuses on certain applied topics such as environmental impact assessment, ecotoxicology, fisheries and mariculture, and biodiversity conservation. Students have an opportunity to conduct independent research in ecology and biodiversity as a final year project or a dissertation under the close supervision of an individual staff member. Apart from the fundamental knowledge and skills in understanding and managing biodiversity offered in the core courses of this major, strong emphasis is placed upon experiential learning such as overseas field expedition and work placement in the environmental sector. Biodiversity conservation requires scientific input as well as passion. Through the range of formal field-based courses as well as extra-curricular activities offered, students taking this major will have opportunities to participate in research, field conservation and education projects both locally and internationally. Assistance will be provided so that students can develop expertise in one or a few groups of plants or animals, as familiarity with species identification is an essential prerequisite for biodiversity scientists or conservation biologists.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and appreciate the major living and non-living components of the regional and global environment, and how they interact; identify threats to them; and know how these threats can be mitigated
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (2) understand and appreciate the variety of life in Hong Kong's and Southeast Asia's natural habitats, become equipped to understand, study, manage and protect that diversity, and appraise the related moral and ethical issues
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (3) have sufficient experience of the basic techniques of modern ecological science and prepare to learn new ones for specific tasks
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- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (5) demonstrate original, independent and critical thinking, with mastery of a range of communication skills
- (by means of coursework, project-based and presentation opportunities in the curriculum)
- (6) have the skill and knowledge to pursue postgraduate ecological research or to develop a career in nature conservation and environmental education, especially in Hong Kong and southern China
- (by means of coursework, tutorial classes, project-based and research-based learning in the curriculum)
- (7) be motivated and sufficiently equipped to apply the knowledge solve local, regional and global environmental problems

(by means of coursework, laboratory-based, tutorial classes, capstone learning and/or project-based learning in the curriculum)

Impermissible Combination:

Minor in Ecology & Biodiversity

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (42 credits)

BIOL3302 Systematics and phylogenetics (6)

BIOL3303 Conservation ecology (6)

Plus at least 30 credits selected from the following courses:

BIOL3109 Environmental microbiology (6)

BIOL3301 Marine biology (6)

BIOL3313 Freshwater ecology (6)

BIOL3314 Plant structure and evolution (6)

BIOL3318 Experimental intertidal ecology (6)

BIOL3319 Terrestrial ecology (6)

BIOL3320 The biology of marine mammals (6)

ENVS3019 Urban ecology (6)

BIOL4301 Fish and fisheries (6)

BIOL4302 Environmental impact assessment (6)

BIOL4303 Animal behaviour (6)

BIOL4861 Ecology & biodiversity internship (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3951 Ecology & biodiversity field course (6)

BIOL3991 Directed studies in ecology & biodiversity (6)

BIOL4911 Conservation science in practice (6)

BIOL4991 Ecology & biodiversity project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major

disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2012

Objectives:

This major is directed at teaching students: (1) how organisms interact with each other and their environments, (2) how species are distributed throughout the world, and (3) key threats and approaches to conserving biodiversity. Special reference is made to Hong Kong and Asia; the ways in which humans have impacted upon natural environments; and, the approaches used to manage or ameliorate those impacts. This major is based around an introductory core, which emphasizes plant and animal biology and includes a compulsory week-long residential field trip. Advanced courses in the major teach students about the ecology and biodiversity of different ecosystems (e.g. marine, terrestrial and freshwater environments) with an emphasis on field work, introduces the use of statistical and molecular techniques in ecology, and focuses on certain applied topics such as environmental impact assessment, ecotoxicology, fisheries and mariculture, and biodiversity conservation. Students have an opportunity to conduct independent research in ecology and biodiversity as a final year project or a dissertation under the close supervision of an individual staff member. Apart from the fundamental knowledge and skills in understanding and managing biodiversity offered in the core courses of this major, strong emphasis is placed upon experiential learning such as overseas field expedition and work placement in the environmental sector. Biodiversity conservation requires scientific input as well as passion. Through the range of formal field-based courses as well as extra-curricular activities offered, students taking this major will have opportunities to participate in research, field conservation and education projects both locally and internationally. Assistance will be provided so that students can develop expertise in one or a few groups of plants or animals, as familiarity with species identification is an essential prerequisite for biodiversity scientists or conservation biologists.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and appreciate the major living and non-living components of the regional and global environment, and how they interact; identify threats to them; and know how these threats can be mitigated
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (2) understand and appreciate the variety of life in Hong Kong's and Southeast Asia's natural habitats, become equipped to understand, study, manage and protect that diversity, and appraise the related moral and ethical issues
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (3) have sufficient experience of the basic techniques of modern ecological science and prepare to learn new ones for specific tasks
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (4) use IT tools appropriately, and access and evaluate materials from libraries, archives and the Internet
- (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- (5) demonstrate original, independent and critical thinking, with mastery of a range of communication skills
- (by means of coursework, project-based and presentation opportunities in the curriculum)
- (6) have the skill and knowledge to pursue postgraduate ecological research or to develop a career in nature conservation and environmental education, especially in Hong Kong and southern China
- (by means of coursework, tutorial classes, project-based and research-based learning in the curriculum)
- (7) be motivated and sufficiently equipped to apply the knowledge solve local, regional and global environmental problems

(by means of coursework, laboratory-based, tutorial classes, capstone learning and/or project-based learning in the curriculum)

Impermissible Combination:

Minor in Ecology & Biodiversity

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (48 credits)

BIOL3302 Systematics and phylogenetics (6)

BIOL3303 Conservation ecology (6)

Plus at least 36 credits selected from the following courses:

BIOL3109 Environmental microbiology (6)

BIOL3301 Marine biology (6)

BIOL3313 Freshwater ecology (6)

BIOL3314 Plant structure and evolution (6)

BIOL3318 Experimental intertidal ecology (6)

BIOL3319 Terrestrial ecology (6)

BIOL3320 The biology of marine mammals (6)

ENVS3019 Urban ecology (6)

BIOL4301 Fish and fisheries (6)

BIOL4302 Environmental impact assessment (6)

BIOL4303 Animal behaviour (6)

BIOL4861 Ecology & biodiversity internship (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3951 Ecology & biodiversity field course (6)

BIOL3991 Directed studies in ecology & biodiversity (6)

BIOL4911 Conservation science in practice (6)

BIOL4991 Ecology & biodiversity project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.

- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Environmental Science

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Environmental Science aims to provide students with a strong scientific and technological background for understanding and addressing the environmental issues faced by humankind. This includes a flexible teaching and learning programme so that students can explore environmental issues from a range of aspects. Core courses in the curriculum emphasize fundamental knowledge in life and environment, physical and sustainable environment, pollution, monitoring and management. Throughout the curriculum, students are encouraged to undertake their own independent study from primary and secondary sources to incorporate critical thinking, field and laboratory work, documentary and archive scholarship, as integrated elements of relevant courses. By completing the curriculum, students are expected to have enhanced their knowledge in environmental science and have improved their problem-solving ability, communication and social skills. Students will be prepared to work in industries and government agencies, where they will help manage wisely the resources for which they are responsible.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain an advanced level of skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods and appreciation of the related ethical issues

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Minor in Environmental Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

ENVS1401 Introduction to environmental science (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

Plus at least 18 credits selected from the following courses (Level 1 & 2):

CHEM1042 General chemistry I (6)

EASC1020 Introduction to climate science (6)

EASC1401 Blue Planet (6)

ENVS1301 Environmental life science (6)

STAT1601 Elementary statistical methods (6) May take either STAT1601

or STAT1603 to fulfill this 36 credits requirement, but not both.

May take either STAT1601 or STAT1603 to fulfill this 36 credits requirement, but not both

STAT1603 Introductory statistics (6)

BIOL2102 Biostatistics (6)

BIOL2306 Ecology and evolution (6)

CHEM2041 Principles of chemistry (6)

2. Advanced level courses (42 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 36 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

CHEM3141 Environmental chemistry (6)

CHEM3241 Analytical chemistry II: chemical instrumentation (6)

CHEM3242 Food and water analysis (6)

EASC3020 Global change: anthropogenic impacts (6)

EASC3405 Environmental remote sensing (6)

ENVS3006 Environmental radiation (6)

ENVS3007 Natural hazards and mitigation (6)

ENVS3010 Sustainable energy and environment (6)

ENVS3019 Urban ecology (6)

ENVS3020 Global change ecology (6)

ENVS3042 Pollution (6)

ENVS3313 Environmental oceanography (6)

MATH3408 Computational methods and differential equations with

applications (6)

STAT3611 Computer-aided data analysis (6)

BIOL4302 Environmental impact assessment (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

ENVS3999 Directed studies in environmental science (6)

ENVS4955 Environmental science in practice (6)

ENVS4966 Environmental science internship (6)

ENVS4999 Environmental science project (12)

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Environmental Science

Offered to students admitted to Year 1 in

2013

Objectives:

The Major in Environmental Science aims to provide students with a strong scientific and technological background for understanding and addressing the environmental issues faced by humankind. This includes a flexible teaching and learning programme so that students can explore environmental issues from a range of aspects. Core courses in the curriculum emphasize fundamental knowledge in life and environment, physical and sustainable environment, pollution, monitoring and management. Throughout the curriculum, students are encouraged to undertake their own independent study from primary and secondary sources to incorporate critical thinking, field and laboratory work, documentary and archive scholarship, as integrated elements of relevant courses. By completing the curriculum, students are expected to have enhanced their knowledge in environmental science and have improved their problem-solving ability, communication and social skills. Students will be prepared to work in industries and government agencies, where they will help manage wisely the resources for which they are responsible.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain an advanced level of skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods and appreciation of the related ethical issues

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Minor in Environmental Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

ENVS1401 Introduction to environmental science (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

Plus at least 18 credits selected from the following courses (Level 1 & 2):

CHEM1042 General chemistry I (6)

EASC1020 Introduction to climate science (6)

EASC1401 Blue Planet (6)

ENVS1301 Environmental life science (6)

STAT1601 Elementary statistical methods (6) May take either STAT1601

or STAT1603 to fulfill this 36 credits requirement, but not both.

May take either STAT1601 or STAT1603 to fulfill this 36 credits requirement, but not both

STAT1603 Introductory statistics (6)

BIOL2102 Biostatistics (6)

BIOL2306 Ecology and evolution (6)

CHEM2041 Principles of chemistry (6)

2. Advanced level courses (42 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 36 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

CHEM3141 Environmental chemistry (6)

CHEM3241 Analytical chemistry II: chemical instrumentation (6)

CHEM3242 Food and water analysis (6)

EASC3020 Global change: anthropogenic impacts (6)

EASC3405 Environmental remote sensing (6)

ENVS3006 Environmental radiation (6)

ENVS3007 Natural hazards and mitigation (6)

ENVS3010 Sustainable energy and environment (6)

ENVS3019 Urban ecology (6)

ENVS3020 Global change ecology (6)

ENVS3042 Pollution (6)

ENVS3313 Environmental oceanography (6)

MATH3408 Computational methods and differential equations with

applications (6)

STAT3611 Computer-aided data analysis (6)

BIOL4302 Environmental impact assessment (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

ENVS3999 Directed studies in environmental science (6)

ENVS4955 Environmental science in practice (6)

ENVS4966 Environmental science internship (6)

ENVS4999 Environmental science project (12)

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Environmental Science

Offered to students admitted to Year 1 in

2012

Objectives:

The Major in Environmental Science aims to provide students with a strong scientific and technological background for understanding and addressing the environmental issues faced by humankind. This includes a flexible teaching and learning programme so that students can explore environmental issues from a range of aspects. Core courses in the curriculum emphasize fundamental knowledge in life and environment, physical and sustainable environment, pollution, monitoring and management. Throughout the curriculum, students are encouraged to undertake their own independent study from primary and secondary sources to incorporate critical thinking, field and laboratory work, documentary and archive scholarship, as integrated elements of relevant courses. By completing the curriculum, students are expected to have enhanced their knowledge in environmental science and have improved their problem-solving ability, communication and social skills. Students will be prepared to work in industries and government agencies, where they will help manage wisely the resources for which they are responsible.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain an advanced level of skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods and appreciation of the related ethical issues

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Minor in Environmental Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

ENVS1401 Introduction to environmental science (6)

STAT1601 Elementary statistical methods (6) May take

May take either STAT1601 or STAT1603 to fulfill this 36 credits requirement, but not

both.

STAT1603 Introductory statistics (6)

May take either STAT1601 or STAT1603 to fulfill this 36 credits requirement, but not

Plus at least 12 credits selected from the following courses (Level 1):

CHEM1042 General chemistry I (6)

EASC1020 Introduction to climate science (6)

EASC1401 Blue Planet (6)

ENVS1301 Environmental life science (6)

Plus at least 12 credits selected from the following courses (Level 2):

BIOL2102 Biostatistics (6)

BIOL2306 Ecology and evolution (6)

CHEM2041 Principles of chemistry (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (42 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 36 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

CHEM3141 Environmental chemistry (6)

CHEM3241 Analytical chemistry II: chemical instrumentation (6)

CHEM3242 Food and water analysis (6)

EASC3020 Global change: anthropogenic impacts (6)

EASC3405 Environmental remote sensing (6)

ENVS3006 Environmental radiation (6)

ENVS3007 Natural hazards and mitigation (6)

ENVS3010 Sustainable energy and environment (6)

ENVS3019 Urban ecology (6)

ENVS3020 Global change ecology (6)

ENVS3042 Pollution (6)

ENVS3313 Environmental oceanography (6)

MATH3408 Computational methods and differential equations with

applications (6)

STAT3611 Computer-aided data analysis (6)

BIOL4302 Environmental impact assessment (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

ENVS3999 Directed studies in environmental science (6)

ENVS4955 Environmental science in practice (6)

ENVS4966 Environmental science internship (6)

ENVS4999 Environmental science project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Food & Nutritional Science

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Food and Nutritional Science aims to offer an exciting, dynamic, and challenging environment to prepare the students for career opportunities in food and nutritional science. The goals of the programme are to provide the students with: (a) critical knowledge and understanding of the theoretical and practical aspects of food science and technology and nutrition and their relationship to human health; (b) critical knowledge and understanding on the relationship between food safety and a wide range of social, legal, technological and environmental factors; (c) a curriculum meeting the requirements for higher degree in MPhil and PhD and or the taught Master of Science degrees in the field of Food industry: Management and Marketing, Food Safety and Toxicology and the postgraduate diploma in dietetics.

The mission is to provide a progressive and effective programme that integrates theoretical and experiential learning to better prepare students for the challenges of the workplace. Throughout the curriculum, there is consistent emphasis on experiential learning through laboratory studies, internship training, research-based learning, debate and presentations, which are designed to enhance students' critical thinking, communication and collaboration, tackling of ill-defined problems, development of individual learning objectives and self-evaluation of performance. Internship experiences can be gained in medical centers, schools, industries, government and community setting. Students graduated from this programme are prepared for diverse careers in the food industry, government or private-sector food and nutrition agencies, and scientific research laboratories, health-care and fitness facilities, hospitals, nutrition edition and communication enterprises.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand the science underpinning food and nutrition as applied to diet and health, and to commercial food production
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) analyze controversial food related issues such as GM foods, nutritional labeling and food security
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand ethical perspectives and practice in all areas of food product development, food safety and public health nutrition, and appreciate and identify the need for ethical standards and professional codes of conduct (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) apply and disseminate scientific knowledge obtained from food, nutrition and related biosciences for the understanding of the influences of nutrition in health and disease, using a range of formats and approaches (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) apply independent thinking and the principles of scientific enquiry to conduct a small research project to test a food- and/or nutrition-related hypothesis
- (by means of coursework, tutorial classes, laboratory-based and project-based learning in the curriculum)
- (6) demonstrate communication and teamwork skills necessary to working in a multi-disciplinary environment (by means of coursework and group-project learning in the curriculum)

Impermissible Combination:

Minor in Food & Nutritional Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (42 credits)

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

Plus at least 24 credits selected from the following courses:

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

BIOL4205 Food processing and engineering (6)

BIOL4207 Meat and dairy sciences (6)

BIOL4209 Functional foods (6)

BIOL4210 Food product development (6)

BIOL4411 Plant and food biotechnology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3992 Directed studies in food & nutritional science (6)

BIOL4962 Food & nutritional science internship (6)

BIOL4992 Food & nutritional science project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students who wish to specialize in a certain area may choose to emphasize selection of courses from the following lists:
- (a) Food Science and Technology: BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3209 Food and nutrient analysis; BIOL3210 Grain production and utilization; BIOL4205 Food processing and engineering; BIOL4207 Meat and dairy sciences; BIOL4209 Functional foods; BIOL4210 Food product development; BIOL4411 Plant and food biotechnology.
- (b) Nutrition and Health Science: BIOL3204 Nutrition and the life cycle, BIOL3205 Human physiology; BIOL3206 Clinical nutrition; BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3211 Nutrigenomics; BIOL4201 Public health nutrition.
- 7. Students who may wish to pursue postgraduate study in dietetics are strongly advised to consult their academic and course selection advisors regarding additional courses in Physiology and Biochemistry.

Remarks:

Major Title Major in Food & Nutritional Science

Offered to students admitted to Year 1 in

2013

Objectives:

The Major in Food and Nutritional Science aims to offer an exciting, dynamic, and challenging environment to prepare the students for career opportunities in food and nutritional science. The goals of the programme are to provide the students with: (a) critical knowledge and understanding of the theoretical and practical aspects of food science and technology and nutrition and their relationship to human health; (b) critical knowledge and understanding on the relationship between food safety and a wide range of social, legal, technological and environmental factors; (c) a curriculum meeting the requirements for higher degree in MPhil and PhD and or the taught Master of Science degrees in the field of Food industry: Management and Marketing, Food Safety and Toxicology and the postgraduate diploma in dietetics.

The mission is to provide a progressive and effective programme that integrates theoretical and experiential learning to better prepare students for the challenges of the workplace. Throughout the curriculum, there is consistent emphasis on experiential learning through laboratory studies, internship training, research-based learning, debate and presentations, which are designed to enhance students' critical thinking, communication and collaboration, tackling of ill-defined problems, development of individual learning objectives and self-evaluation of performance. Internship experiences can be gained in medical centers, schools, industries, government and community setting. Students graduated from this programme are prepared for diverse careers in the food industry, government or private-sector food and nutrition agencies, and scientific research laboratories, health-care and fitness facilities, hospitals, nutrition edition and communication enterprises.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand the science underpinning food and nutrition as applied to diet and health, and to commercial food production
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) analyze controversial food related issues such as GM foods, nutritional labeling and food security
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand ethical perspectives and practice in all areas of food product development, food safety and public health nutrition, and appreciate and identify the need for ethical standards and professional codes of conduct (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) apply and disseminate scientific knowledge obtained from food, nutrition and related biosciences for the understanding of the influences of nutrition in health and disease, using a range of formats and approaches (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) apply independent thinking and the principles of scientific enquiry to conduct a small research project to test a food- and/or nutrition-related hypothesis
- (by means of coursework, tutorial classes, laboratory-based and project-based learning in the curriculum)
- (6) demonstrate communication and teamwork skills necessary to working in a multi-disciplinary environment (by means of coursework and group-project learning in the curriculum)

Impermissible Combination:

Minor in Food & Nutritional Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (42 credits)

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

Plus at least 24 credits selected from the following courses:

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

BIOL4205 Food processing and engineering (6)

BIOL4207 Meat and dairy sciences (6)

BIOL4209 Functional foods (6)

BIOL4210 Food product development (6)

BIOL4411 Plant and food biotechnology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3992 Directed studies in food & nutritional science (6)

BIOL4962 Food & nutritional science internship (6)

BIOL4992 Food & nutritional science project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students who wish to specialize in a certain area may choose to emphasize selection of courses from the following lists:
- (a) Food Science and Technology: BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3209 Food and nutrient analysis; BIOL3210 Grain production and utilization; BIOL4205 Food processing and engineering; BIOL4207 Meat and dairy sciences; BIOL4209 Functional foods; BIOL4210 Food product development; BIOL4411 Plant and food biotechnology.
- (b) Nutrition and Health Science: BIOL3204 Nutrition and the life cycle, BIOL3205 Human physiology; BIOL3206 Clinical nutrition; BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3211 Nutrigenomics; BIOL4201 Public health nutrition.
- 7. Students who may wish to pursue postgraduate study in dietetics are strongly advised to consult their academic and course selection advisors regarding additional courses in Physiology and Biochemistry.

Remarks:

Major Title Major in Food & Nutritional Science

Offered to students admitted to Year 1 in

2012

Objectives:

The Major in Food and Nutritional Science aims to offer an exciting, dynamic, and challenging environment to prepare the students for career opportunities in food and nutritional science. The goals of the programme are to provide the students with: (a) critical knowledge and understanding of the theoretical and practical aspects of food science and technology and nutrition and their relationship to human health; (b) critical knowledge and understanding on the relationship between food safety and a wide range of social, legal, technological and environmental factors; (c) a curriculum meeting the requirements for higher degree in MPhil and PhD and or the taught Master of Science degrees in the field of Food industry: Management and Marketing, Food Safety and Toxicology and the postgraduate diploma in dietetics.

The mission is to provide a progressive and effective programme that integrates theoretical and experiential learning to better prepare students for the challenges of the workplace. Throughout the curriculum, there is consistent emphasis on experiential learning through laboratory studies, internship training, research-based learning, debate and presentations, which are designed to enhance students' critical thinking, communication and collaboration, tackling of ill-defined problems, development of individual learning objectives and self-evaluation of performance. Internship experiences can be gained in medical centers, schools, industries, government and community setting. Students graduated from this programme are prepared for diverse careers in the food industry, government or private-sector food and nutrition agencies, and scientific research laboratories, health-care and fitness facilities, hospitals, nutrition edition and communication enterprises.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand the science underpinning food and nutrition as applied to diet and health, and to commercial food production
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) analyze controversial food related issues such as GM foods, nutritional labeling and food security
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand ethical perspectives and practice in all areas of food product development, food safety and public health nutrition, and appreciate and identify the need for ethical standards and professional codes of conduct (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) apply and disseminate scientific knowledge obtained from food, nutrition and related biosciences for the understanding of the influences of nutrition in health and disease, using a range of formats and approaches (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (5) apply independent thinking and the principles of scientific enquiry to conduct a small research project to test a food- and/or nutrition-related hypothesis
- (by means of coursework, tutorial classes, laboratory-based and project-based learning in the curriculum)
- (6) demonstrate communication and teamwork skills necessary to working in a multi-disciplinary environment (by means of coursework and group-project learning in the curriculum)

Impermissible Combination:

Minor in Food & Nutritional Science

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (42 credits)

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

Plus at least 24 credits selected from the following courses:

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

BIOL4205 Food processing and engineering (6)

BIOL4207 Meat and dairy sciences (6)

BIOL4209 Functional foods (6)

BIOL4210 Food product development (6)

BIOL4411 Plant and food biotechnology (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3992 Directed studies in food & nutritional science (6)

BIOL4962 Food & nutritional science internship (6)

BIOL4992 Food & nutritional science project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students who wish to specialize in a certain area may choose to emphasize selection of courses from the following lists:
- (a) Food Science and Technology: BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3209 Food and nutrient analysis; BIOL3210 Grain production and utilization; BIOL4205 Food processing and engineering; BIOL4207 Meat and dairy sciences; BIOL4209 Functional foods; BIOL4210 Food product development; BIOL4411 Plant and food biotechnology.
- (b) Nutrition and Health Science: BIOL3204 Nutrition and the life cycle, BIOL3205 Human physiology; BIOL3206 Clinical nutrition; BIOL3207 Food and nutritional toxicology; BIOL3208 Food safety and quality management; BIOL3211 Nutrigenomics; BIOL4201 Public health nutrition.
- 7. Students who may wish to pursue postgraduate study in dietetics are strongly advised to consult their academic and course selection advisors regarding additional courses in Physiology and Biochemistry.

Remarks:

Major Title Major in Geology

Offered to students admitted to Year 1 in

2014

Objectives:

Geology concerns with the scientific study of the Earth's structure, processes, material and history. Geologists apply knowledge of chemistry, biology, physics and mathematics to solve Earth problems. The Geology Major aims to give students a sound foundation of the geological sciences and enable them to pursue postgraduate studies or careers in the geosciences. The curriculum emphasizes the development of knowledge and skills, and practical experience in the field. The core courses are designed to give students a well-rounded understanding of the geological disciplines including petrology, paleontology, geophysics, geochemistry, geochronology and the applications of geological knowledge to resource development, natural hazard management, and geotechnical and environmental engineering. Students who wish to become a professional geologist may take additional designated courses designed to meet the pathway for accreditation as a chartered geologist.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and apply key concepts in the conventional areas of the geosciences, covering the areas of physical geology, historical geology, mineralogy, petrology, geochemistry, geophysics, structural geology, tectonics and petrogenesis, and earth resources
- (by means of coursework, laboratory-based, tutorial classes and project-based learning in the curriculum)
- (2) have acquired the ability to make observation, description, measurement and analysis of common geological features in the field, conduct geological mapping as well as undertake independent geological study, and appraise the related ethical issues
- (by means of both local and overseas residential field learning experience)
- (3) communicate scientific concepts and critically discuss aspects of contemporary issues pertaining to earth sciences, environments and resources
- (by means of capstone, project-based learning and presentation opportunities in the curriculum)
- (4) have gained some insight to the real-life industrial environment and developed connections within the geosciences profession
- (by means of internship opportunities in the curriculum)
- (5) work with others in an effective manner and have learned to accept and appreciate different cultures
- (by means of group project learning, field learning experience in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2406 Geochemistry (6)

EASC2407 Mineralogy (6)

2. Advanced level courses (48 credits)

EASC3402 Petrology (6)

EASC3403 Sedimentary environments (6)

EASC3404 Structural geology (6)

EASC3408 Geophysics (6) **EASC3409** Igneous and metamorphic petrogenesis (6) EASC4406 Earth Dynamics & Global Tectonics (6) Plus at least 12 credits selected from the following courses: EASC3406 Reconstruction of past climate (6) **EASC3410** Hydrogeology (6) EASC3412 Earth resources (6) **EASC3413** Engineering geology (6) EASC3414 Soil and rock mechanics (6) Advanced geochemistry and geochronology (6) **EASC3416 EASC3999** Directed studies in earth sciences (6) ENVS3007 Natural hazards and mitigation (6) Biogeochemical cycles (6) EASC4403 EASC4407 Regional geology (6) EASC4408 Special topics in earth sciences (6)

Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4999

EASC4955 Integrated field studies (6)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Geology

Offered to students admitted to Year 1 in

2013

Objectives:

Geology concerns with the scientific study of the Earth's structure, processes, material and history. Geologists apply knowledge of chemistry, biology, physics and mathematics to solve Earth problems. The Geology Major aims to give students a sound foundation of the geological sciences and enable them to pursue postgraduate studies or careers in the geosciences. The curriculum emphasizes the development of knowledge and skills, and practical experience in the field. The core courses are designed to give students a well-rounded understanding of the geological disciplines including petrology, paleontology, geophysics, geochemistry, geochronology and the applications of geological knowledge to resource development, natural hazard management, and geotechnical and environmental engineering. Students who wish to become a professional geologist may take additional designated courses designed to meet the pathway for accreditation as a chartered geologist.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and apply key concepts in the conventional areas of the geosciences, covering the areas of physical geology, historical geology, mineralogy, petrology, geochemistry, geophysics, structural geology, tectonics and petrogenesis, and earth resources
- (by means of coursework, laboratory-based, tutorial classes and project-based learning in the curriculum)
- (2) have acquired the ability to make observation, description, measurement and analysis of common geological features in the field, conduct geological mapping as well as undertake independent geological study, and appraise the related ethical issues
- (by means of both local and overseas residential field learning experience)
- (3) communicate scientific concepts and critically discuss aspects of contemporary issues pertaining to earth sciences, environments and resources
- (by means of capstone, project-based learning and presentation opportunities in the curriculum)
- (4) have gained some insight to the real-life industrial environment and developed connections within the geosciences profession
- (by means of internship opportunities in the curriculum)
- (5) work with others in an effective manner and have learned to accept and appreciate different cultures
- (by means of group project learning, field learning experience in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2406 Geochemistry (6)

EASC2407 Mineralogy (6)

2. Advanced level courses (48 credits)

EASC3402 Petrology (6)

EASC3403 Sedimentary environments (6)

EASC3404 Structural geology (6)

EASC3408 Geophysics (6) **EASC3409** Igneous and metamorphic petrogenesis (6) EASC4406 Earth Dynamics & Global Tectonics (6) Plus at least 12 credits selected from the following courses: EASC3406 Reconstruction of past climate (6) **EASC3410** Hydrogeology (6) EASC3412 Earth resources (6) **EASC3413** Engineering geology (6) EASC3414 Soil and rock mechanics (6) Advanced geochemistry and geochronology (6) **EASC3416 EASC3999** Directed studies in earth sciences (6)

ENVS3007 Natural hazards and mitigation (6)

EASC4403 Biogeochemical cycles (6)

EASC4407 Regional geology (6)

EASC4408 Special topics in earth sciences (6)

EASC4999 Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4955 Integrated field studies (6)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Geology

Offered to students admitted to Year 1 in

2012

Objectives:

Geology concerns with the scientific study of the Earth's structure, processes, material and history. Geologists apply knowledge of chemistry, biology, physics and mathematics to solve Earth problems. The Geology Major aims to give students a sound foundation of the geological sciences and enable them to pursue postgraduate studies or careers in the geosciences. The curriculum emphasizes the development of knowledge and skills, and practical experience in the field. The core courses are designed to give students a well-rounded understanding of the geological disciplines including petrology, paleontology, geophysics, geochemistry, geochronology and the applications of geological knowledge to resource development, natural hazard management, and geotechnical and environmental engineering. Students who wish to become a professional geologist may take additional designated courses designed to meet the pathway for accreditation as a chartered geologist.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and apply key concepts in the conventional areas of the geosciences, covering the areas of physical geology, historical geology, mineralogy, petrology, geochemistry, geophysics, structural geology, tectonics and petrogenesis, and earth resources
- (by means of coursework, laboratory-based, tutorial classes and project-based learning in the curriculum)
- (2) have acquired the ability to make observation, description, measurement and analysis of common geological features in the field, conduct geological mapping as well as undertake independent geological study, and appraise the related ethical issues
- (by means of both local and overseas residential field learning experience)
- (3) communicate scientific concepts and critically discuss aspects of contemporary issues pertaining to earth sciences, environments and resources
- (by means of capstone, project-based learning and presentation opportunities in the curriculum)
- (4) have gained some insight to the real-life industrial environment and developed connections within the geosciences profession
- (by means of internship opportunities in the curriculum)
- (5) work with others in an effective manner and have learned to accept and appreciate different cultures
- (by means of group project learning, field learning experience in the curriculum)

Impermissible Combination:

Minor in Earth Sciences

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

EASC2402 Field methods (6)

EASC2406 Geochemistry (6)

EASC2407 Mineralogy (6)

2. Advanced level courses (48 credits)

EASC3402 Petrology (6)

EASC3403 Sedimentary environments (6)

EASC3404 Structural geology (6)

EASC3409 Igneous and metamorphic petrogenesis (6)
EASC4406 Earth Dynamics & Global Tectonics (6)

Plus at least 12 credits selected from the following courses:

EASC3406 Reconstruction of past climate (6)

Geophysics (6)

EASC3410 Hydrogeology (6)

EASC3408

EASC3412 Earth resources (6)

EASC3413 Engineering geology (6)

EASC3414 Soil and rock mechanics (6)

EASC3416 Advanced geochemistry and geochronology (6)

EASC3999 Directed studies in earth sciences (6)

ENVS3007 Natural hazards and mitigation (6)

EASC4403 Biogeochemical cycles (6)

EASC4407 Regional geology (6)

EASC4408 Special topics in earth sciences (6)

EASC4999 Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4955 Integrated field studies (6)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Mathematics

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Mathematics provides students with a solid and comprehensive undergraduate education in the subject. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems. Core courses in the curriculum emphasize fundamental knowledge and concepts in Mathematics and elective courses provide training in both pure and applied aspects of Mathematics. Throughout the curriculum there is also emphasis on experiential learning through guided studies, projects, seminars and summer internships. With the diversity of courses offered in the major, various specializations are available. These will lead to careers in a wide range of sectors including education, economics and finance, logistics, management, research and further studies.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and present fundamental concepts in mathematics
- (by means of coursework and learning activities in the major or minor curriculum)
- (2) apply mathematical theory and techniques to different areas of Sciences, and appraise the related ethical issues
- (by means of coursework and learning activities in the major or minor curriculum)
- (3) communicate in mathematical language and present scientific arguments
- (by means of coursework, seminars, guided studies and projects)
- (4) collaborate and work with other students in an effective manner
- (by means of guided studies, projects and seminars)
- (5) appreciate the beauty and power of mathematics
- (by means of guided studies, projects and seminars)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Minor in Mathematics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

MATH2012 Fundamental concepts of mathematics (6)

MATH2101 Linear algebra I (6)
MATH2102 Linear algebra II (6)

MATH2211 Multivariable calculus (6)

MATH2241 Introduction to mathematical analysis (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)
MATH3401 Analysis I (6)

MATH3403 Functions of a complex variable (6)

Plus at least 24 credits advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), at least 12 credits of which should be from MATH4XXX or MATH6XXX level, excluding MATH4966 Mathematics internship, subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

MATH4966 Mathematics internship (6)

MATH4999 Mathematics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Major Title Major in Mathematics

Offered to students

2013

admitted to Year 1 in

Objectives:

The Major in Mathematics provides students with a solid and comprehensive undergraduate education in the subject. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems. Core courses in the curriculum emphasize fundamental knowledge and concepts in Mathematics and elective courses provide training in both pure and applied aspects of Mathematics. Throughout the curriculum there is also emphasis on experiential learning through guided studies, projects, seminars and summer internships. With the diversity of courses offered in the major, various specializations are available. These will lead to careers in a wide range of sectors including education, economics and finance, logistics, management, research and further studies.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and present fundamental concepts in mathematics
- (by means of coursework and learning activities in the major or minor curriculum)
- (2) apply mathematical theory and techniques to different areas of Sciences, and appraise the related ethical issues
- (by means of coursework and learning activities in the major or minor curriculum)
- (3) communicate in mathematical language and present scientific arguments
- (by means of coursework, seminars, guided studies and projects)
- (4) collaborate and work with other students in an effective manner
- (by means of guided studies, projects and seminars)
- (5) appreciate the beauty and power of mathematics
- (by means of guided studies, projects and seminars)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Minor in Mathematics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

MATH2012 Fundamental concepts of mathematics (6)

MATH2101 Linear algebra I (6)
MATH2102 Linear algebra II (6)

MATH2211 Multivariable calculus (6)

MATH2241 Introduction to mathematical analysis (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)
MATH3401 Analysis I (6)

MATH3403 Functions of a complex variable (6)

Plus at least 24 credits advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), at least 12 credits of which should be from MATH4XXX or MATH6XXX level, excluding MATH4966 Mathematics internship, subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

MATH4966 Mathematics internship (6)

MATH4999 Mathematics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Major Title Major in Mathematics

Offered to students

2012

admitted to Year 1 in

Objectives:

The Major in Mathematics provides students with a solid and comprehensive undergraduate education in the subject. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems. Core courses in the curriculum emphasize fundamental knowledge and concepts in Mathematics and elective courses provide training in both pure and applied aspects of Mathematics. Throughout the curriculum there is also emphasis on experiential learning through guided studies, projects, seminars and summer internships. With the diversity of courses offered in the major, various specializations are available. These will lead to careers in a wide range of sectors including education, economics and finance, logistics, management, research and further studies.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe and present fundamental concepts in mathematics
- (by means of coursework and learning activities in the major or minor curriculum)
- (2) apply mathematical theory and techniques to different areas of Sciences, and appraise the related ethical issues
- (by means of coursework and learning activities in the major or minor curriculum)
- (3) communicate in mathematical language and present scientific arguments
- (by means of coursework, seminars, guided studies and projects)
- (4) collaborate and work with other students in an effective manner
- (by means of guided studies, projects and seminars)
- (5) appreciate the beauty and power of mathematics
- (by means of guided studies, projects and seminars)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Minor in Mathematics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

MATH2012 Fundamental concepts of mathematics (6)

MATH2101 Linear algebra I (6)
MATH2102 Linear algebra II (6)

MATH2211 Multivariable calculus (6)

MATH2241 Introduction to mathematical analysis (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)
MATH3401 Analysis I (6)

MATH3403 Functions of a complex variable (6)

Plus at least 24 credits advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), at least 12 credits of which should be from MATH4XXX or MATH6XXX level, excluding MATH4966 Mathematics internship, subject to pre-requisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

MATH4966 Mathematics internship (6)

MATH4999 Mathematics project (12)

Notes

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Major Title Major in Mathematics/Physics

Offered to students

2014

admitted to Year 1 in

Objectives:

The Major in Mathematics/Physics aims to provide students with a solid foundation in both physics and mathematics. This major is catered especially for students interested in the more theoretical aspects of physics. It covers a wide range of core areas in both disciplines which form the blocks of fundamental knowledge for further specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics, electrodynamics, linear algebra, mathematical analysis, abstract algebra, complex variables, differential equations, modern differential geometry, etc. A large selection of elective courses is provided for students to pursue a broad spectrum of professional knowledge in mathematical and theoretical physics. Analytical thinking, quantitative reasoning and innovative ideas are fostered through the effective design of courses and research projects. The curriculum emphasizes experiential learning through internships, field studies and research projects supervised by experts. With the comprehensive training received, graduates are expected to be well-prepared for further studies and to pursue careers in many fields of science and engineering.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with a rigorous representation using their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically
- (by means of coursework, tutorial classes and assessments in the curriculum)
- (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics

Major in Physics

Minor in Mathematics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

PHYS1250 Fundamental physics (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)

MATH3401 Analysis I (6)

PHYS3350 Classical mechanics (6)
PHYS3351 Quantum mechanics (6)

MATH4501 Geometry (6)

PHYS4351 Advanced quantum mechanics (6)

Plus at least 6 credits of advanced level Mathematics or Physics courses (MATH3XXX or MATH4XXX or MATH6XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

PHYS3999 Directed studies in physics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

MATH4966 Mathematics internship (6)

MATH4999 Mathematics project (12)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. (a) Students must have level 3 or above in HKDSE Physics or HKDSE Combined Science with Physics component or equivalent to take this major. Students who do not fufill this requirement are advised to take PHYS1240 Physics by inquiry; and
- (b) Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fufill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit

requirement.

Remarks:

Major Title Major in Mathematics/Physics

2013

Offered to students

admitted to Year 1 in

Objectives:

The Major in Mathematics/Physics aims to provide students with a solid foundation in both physics and mathematics. This major is catered especially for students interested in the more theoretical aspects of physics. It covers a wide range of core areas in both disciplines which form the blocks of fundamental knowledge for further specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics, electrodynamics, linear algebra, mathematical analysis, abstract algebra, complex variables, differential equations, modern differential geometry, etc. A large selection of elective courses is provided for students to pursue a broad spectrum of professional knowledge in mathematical and theoretical physics. Analytical thinking, quantitative reasoning and innovative ideas are fostered through the effective design of courses and research projects. The curriculum emphasizes experiential learning through internships, field studies and research projects supervised by experts. With the comprehensive training received, graduates are expected to be well-prepared for further studies and to pursue careers in many fields of science and engineering.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with a rigorous representation using their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically
- (by means of coursework, tutorial classes and assessments in the curriculum)
- (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics

Major in Physics

Minor in Mathematics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

PHYS1250 Fundamental physics (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)

MATH3401 Analysis I (6)

PHYS3350 Classical mechanics (6)
PHYS3351 Quantum mechanics (6)

MATH4501 Geometry (6)

PHYS4351 Advanced quantum mechanics (6)

Plus at least 6 credits of advanced level Mathematics or Physics courses (MATH3XXX or MATH4XXX or MATH6XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

PHYS3999 Directed studies in physics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

Physics internship (6)

MATH4966 Mathematics internship (6)
MATH4999 Mathematics project (12)

PHYS4999 Physics project (12)

Motos

PHYS4966

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. (a) Students must have level 3 or above in HKDSE Physics or HKDSE Combined Science with Physics component or equivalent to take this major. Students who do not fufill this requirement are advised to take PHYS1240 Physics by inquiry; and
- (b) Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fufill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit

requirement.

Remarks:

Major Title Major in Mathematics/Physics

Offered to students

2012

admitted to Year 1 in

Objectives:

The Major in Mathematics/Physics aims to provide students with a solid foundation in both physics and mathematics. This major is catered especially for students interested in the more theoretical aspects of physics. It covers a wide range of core areas in both disciplines which form the blocks of fundamental knowledge for further specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics, electrodynamics, linear algebra, mathematical analysis, abstract algebra, complex variables, differential equations, modern differential geometry, etc. A large selection of elective courses is provided for students to pursue a broad spectrum of professional knowledge in mathematical and theoretical physics. Analytical thinking, quantitative reasoning and innovative ideas are fostered through the effective design of courses and research projects. The curriculum emphasizes experiential learning through internships, field studies and research projects supervised by experts. With the comprehensive training received, graduates are expected to be well-prepared for further studies and to pursue careers in many fields of science and engineering.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with a rigorous representation using their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically
- (by means of coursework, tutorial classes and assessments in the curriculum)
- (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics

Major in Physics

Minor in Mathematics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

MATH1013 University mathematics II (6)

PHYS1250 Fundamental physics (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

MATH3301 Algebra I (6)

MATH3401 Analysis I (6)

PHYS3350 Classical mechanics (6)
PHYS3351 Quantum mechanics (6)

MATH4501 Geometry (6)

PHYS4351 Advanced quantum mechanics (6)

Plus at least 6 credits of advanced level Mathematics or Physics courses (MATH3XXX or MATH4XXX or MATH6XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

MATH3999 Directed studies in mathematics (6)

PHYS3999 Directed studies in physics (6)

MATH4910 Senior Mathematics seminar (6)

MATH4911 Mathematics capstone project (6)

MATH4966 Mathematics internship (6)

MATH4999 Mathematics project (12)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
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- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. (a) Students must have level 3 or above in HKDSE Physics or HKDSE Combined Science with Physics component or equivalent to take this major. Students who do not fufill this requirement are advised to take PHYS1240 Physics by inquiry; and
- (b) Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fufill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit

requirement.

Remarks:

Major Title Major in Molecular Biology & Biotechnology

Offered to students admitted to Year 1 in

2014

Objectives:

Recent advancements in Molecular Biology & Biotechnology have not only cracked important and fundamental problems in life sciences, but also emerged as a mainstay of science and technologies of the 21st century. Innovations from advances in these fields have substantially transformed our daily lives, society and environment. This Major offers specialized training in state-of-the-art molecular and cell biology, and in the translation of basic knowledge into modern industrial and medical applications. Students will be able to gain an understanding of cutting edge molecular biology and biotechnological applications, ranging from exploitation of bioactive substances, genetic engineering for agricultural production, fisheries and aquaculture, biomedical researches for pharmaceutical and clinical purposes, biofuels as alternative energy sources, bioremediation for cleaning up contaminated environments, and wastewater treatment. Built upon a sound theoretical foundation, students will further develop variousessential skills in molecular biology and biotechnology through hands-on laboratory trainings and experimental biology-based projects. A feature of this major is to provide key transferable skills by engaging students in inquiry, critical thinking, and problem solving in their learning.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe key concepts in molecular biology and modern biotechnology using knowledge from cell biology, microbiology, biochemistry, immunology, omics and systems biology
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (2) apply laboratory techniques essential to modern molecular science
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (3) communicate in written and oral communication skills and collaborate with other students effectively
- (by means of coursework, research-based learning and presentation opportunities in the curriculum)
- (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment

(by means of coursework, laboratory-based and experiential learning in the curriculum)

Impermissible Combination:

Minor in Molecular Biology & Biotechnology

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 30 credits requirement, but not

oth.

BIOC2600 Basic biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 30 credits requirement, but not

both.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (48 credits)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL4402 Microbial biotechnology (6)

BIOL4411 Plant and food biotechnology (6)

BIOL4415 Healthcare biotechnology (6)

Plus at least 18 credits selected from the following courses:

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3405 Molecular microbiology (6)

BIOL3406 Reproduction and reproductive biotechnology (6)

BIOL3408 Genetics (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

BIOL4409 General virology (6)

BIOL4416 Stem cells and regenerative biology (6)

BIOL4417 'Omics' and systems biology (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3993 Directed studies in Molecular biology & biotechnology (6)

BIOL4963 Molecular biology & biotechnology internship (6)

BIOL4993 Molecular biology & biotechnology project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Molecular Biology & Biotechnology

Offered to students admitted to Year 1 in

2013

Objectives:

Recent advancements in Molecular Biology & Biotechnology have not only cracked important and fundamental problems in life sciences, but also emerged as a mainstay of science and technologies of the 21st century. Innovations from advances in these fields have substantially transformed our daily lives, society and environment. This Major offers specialized training in state-of-the-art molecular and cell biology, and in the translation of basic knowledge into modern industrial and medical applications. Students will be able to gain an understanding of cutting edge molecular biology and biotechnological applications, ranging from exploitation of bioactive substances, genetic engineering for agricultural production, fisheries and aquaculture, biomedical researches for pharmaceutical and clinical purposes, biofuels as alternative energy sources, bioremediation for cleaning up contaminated environments, and wastewater treatment. Built upon a sound theoretical foundation, students will further develop variousessential skills in molecular biology and biotechnology through hands-on laboratory trainings and experimental biology-based projects. A feature of this major is to provide key transferable skills by engaging students in inquiry, critical thinking, and problem solving in their learning.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe key concepts in molecular biology and modern biotechnology using knowledge from cell biology, microbiology, biochemistry, immunology, omics and systems biology
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (2) apply laboratory techniques essential to modern molecular science
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (3) communicate in written and oral communication skills and collaborate with other students effectively
- (by means of coursework, research-based learning and presentation opportunities in the curriculum)
- (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment

(by means of coursework, laboratory-based and experiential learning in the curriculum)

Impermissible Combination:

Minor in Molecular Biology & Biotechnology

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6) May take either BIOL2220 or BIOC2600 to fulfill this 30

credits requirement, but not

both.

BIOC2600 Basic biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 30 credits requirement, but not

both.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (48 credits)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL4402 Microbial biotechnology (6)

BIOL4411 Plant and food biotechnology (6)

BIOL4415 Healthcare biotechnology (6)

Plus at least 18 credits selected from the following courses:

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3405 Molecular microbiology (6)

BIOL3406 Reproduction and reproductive biotechnology (6)

BIOL3408 Genetics (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

BIOL4409 General virology (6)

BIOL4416 Stem cells and regenerative biology (6)

BIOL4417 'Omics' and systems biology (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3993 Directed studies in Molecular biology & biotechnology (6)

BIOL4963 Molecular biology & biotechnology internship (6)

BIOL4993 Molecular biology & biotechnology project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Molecular Biology & Biotechnology

Offered to students admitted to Year 1 in

2012

Objectives:

Recent advancements in Molecular Biology & Biotechnology have not only cracked important and fundamental problems in life sciences, but also emerged as a mainstay of science and technologies of the 21st century. Innovations from advances in these fields have substantially transformed our daily lives, society and environment. This Major offers specialized training in state-of-the-art molecular and cell biology, and in the translation of basic knowledge into modern industrial and medical applications. Students will be able to gain an understanding of cutting edge molecular biology and biotechnological applications, ranging from exploitation of bioactive substances, genetic engineering for agricultural production, fisheries and aquaculture, biomedical researches for pharmaceutical and clinical purposes, biofuels as alternative energy sources, bioremediation for cleaning up contaminated environments, and wastewater treatment. Built upon a sound theoretical foundation, students will further develop variousessential skills in molecular biology and biotechnology through hands-on laboratory trainings and experimental biology-based projects. A feature of this major is to provide key transferable skills by engaging students in inquiry, critical thinking, and problem solving in their learning.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe key concepts in molecular biology and modern biotechnology using knowledge from cell biology, microbiology, biochemistry, immunology, omics and systems biology
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (2) apply laboratory techniques essential to modern molecular science
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (3) communicate in written and oral communication skills and collaborate with other students effectively
- (by means of coursework, research-based learning and presentation opportunities in the curriculum)
- (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues
- (by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment

(by means of coursework, laboratory-based and experiential learning in the curriculum)

Impermissible Combination:

Minor in Molecular Biology & Biotechnology

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 30 credits requirement, but not

both.

BIOC2600 Basic biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 30 credits requirement, but not

botn.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (48 credits)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL4402 Microbial biotechnology (6)

BIOL4411 Plant and food biotechnology (6)

BIOL4415 Healthcare biotechnology (6)

Plus at least 18 credits selected from the following courses:

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOL3405 Molecular microbiology (6)

BIOL3406 Reproduction and reproductive biotechnology (6)

BIOL3408 Genetics (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

BIOL4409 General virology (6)

BIOL4416 Stem cells and regenerative biology (6)

BIOL4417 'Omics' and systems biology (6)

ENVS4110 Environmental remediation (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

BIOL3993 Directed studies in Molecular biology & biotechnology (6)

BIOL4963 Molecular biology & biotechnology internship (6)

BIOL4993 Molecular biology & biotechnology project (12)

Notes:

1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.

- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.

5. Courses at the advanced level and capstone requirements are subject to change.

Remarks:

Major Title Major in Physics

Offered to students

admitted to Year 1 in

2014

Objectives:

The Major in Physics aims to provide students with a solid foundation on the subject. Core courses form the blocks of fundamental knowledge to pursue learning in specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics and electrodynamics. A large selection of elective courses is provided for students to pursue a wide range of topics from the very small scale (i.e. subatomic particles) to the large scale (i.e. cosmology). Students will attain professional knowledge in physics, research experience and the training of analytical thinking and quantitative reasoning during their studies. Graduates are expected to have acquired the broad training which can equip them well for further studies in multiple science and technology disciplines and to work in their specialized area.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle problems either theoretical or experimental in nature
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) analyze problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-word setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1150 Problem solving in physics (6)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2260 Heat and waves (6)
PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3350 Classical mechanics (6)

PHYS3351 Quantum mechanics (6)

PHYS3450 Electromagnetism (6)

PHYS3550 Statistical mechanics & thermodynamics (6)

Plus at least 18 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Major Title Major in Physics

Offered to students

admitted to Year 1 in

2013

Objectives:

The Major in Physics aims to provide students with a solid foundation on the subject. Core courses form the blocks of fundamental knowledge to pursue learning in specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics and electrodynamics. A large selection of elective courses is provided for students to pursue a wide range of topics from the very small scale (i.e. subatomic particles) to the large scale (i.e. cosmology). Students will attain professional knowledge in physics, research experience and the training of analytical thinking and quantitative reasoning during their studies. Graduates are expected to have acquired the broad training which can equip them well for further studies in multiple science and technology disciplines and to work in their specialized area.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle problems either theoretical or experimental in nature
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) analyze problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-word setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1150 Problem solving in physics (6)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2260 Heat and waves (6)
PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3350 Classical mechanics (6)

PHYS3351 Quantum mechanics (6)

PHYS3450 Electromagnetism (6)

PHYS3550 Statistical mechanics & thermodynamics (6)

Plus at least 18 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Major Title Major in Physics

Offered to students

admitted to Year 1 in

2012

Objectives:

The Major in Physics aims to provide students with a solid foundation on the subject. Core courses form the blocks of fundamental knowledge to pursue learning in specializations, e.g. quantum mechanics, statistical mechanics, classical mechanics and electrodynamics. A large selection of elective courses is provided for students to pursue a wide range of topics from the very small scale (i.e. subatomic particles) to the large scale (i.e. cosmology). Students will attain professional knowledge in physics, research experience and the training of analytical thinking and quantitative reasoning during their studies. Graduates are expected to have acquired the broad training which can equip them well for further studies in multiple science and technology disciplines and to work in their specialized area.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with their professional knowledge
- (by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle problems either theoretical or experimental in nature
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) analyze problems qualitatively and quantitatively, and appraise the related ethical issues
- (by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-word setting
- (by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

Impermissible Combination:

Major in Mathematics/Physics

Minor in Physics

Required courses (96 credits)

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (36 credits)

PHYS1150 Problem solving in physics (6)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2255 Introductory electricity and magnetism (6)

PHYS2260 Heat and waves (6)
PHYS2265 Modern physics (6)

2. Advanced level courses (42 credits)

PHYS3350 Classical mechanics (6)

PHYS3351 Quantum mechanics (6)

PHYS3450 Electromagnetism (6)

PHYS3550 Statistical mechanics & thermodynamics (6)

Plus at least 18 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

PHYS3999 Directed studies in physics (6)

PHYS4966 Physics internship (6)

PHYS4999 Physics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Capstone requirement for BEd&BSc degree students is different. Students are required to take an additional 6-credit advanced level course in the major to replace the capstone requirement of this Major. Students should consult the Faculty of Education for details.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks

Major Title Major in Risk Management

Offered to students admitted to Year 1 in

2014

Objectives:

The Major in Risk Management aims to provide students with the skills and expertise in the theory and methodology behind the scientific process of risk management, with application to actuarial science, finance and other related areas of interest. It is designed to provide solid training in the concepts of the risk management process, statistical models and methods of risk management, and good risk management practice. Core courses in the curriculum emphasize fundamental concepts and nature of risk assessment, risk management and governance from different standpoints while elective courses provide either training in specific Risk Management disciplines or an extension of knowledge aiming to give students more modeling, technical and analytical skills in risk management, including data mining, stochastic calculus, and financial time series modeling.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and categorize the various risks faced by an organization and be able to demonstrate a critical understanding of generic risk management issues and techniques
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) analyze and assess risk management situations, and be able to deal with qualitative as well as quantitative aspects appropriate to the situation
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) critically evaluate and make effective use of models and techniques for risk assessment and management, and appraise the related ethical issues
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) make informed risk management decisions, employ any techniques necessary to acquire and interpret relevant data and information from different sources and the factors that influence their perceptions of risk identification, risk reduction, risk mitigation and risk transfer
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on risk management issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) gain insights into current advances in risk management through either project or industrial training
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Statistics

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

MATH2014 Multivariable calculus and linear algebra (6)

STAT2601 Probability and statistics I (6)

STAT2602 Probability and statistics II (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3609 The statistics of investment risk (6)

STAT3615 Practical mathematics for investment (6)

STAT4601 Time-series analysis (6)

Plus at least 24 credits selected from the following courses:

STAT3603 Probability modelling (6)

STAT3610 Risk management and insurance (6)

STAT3612 Data mining (6)

STAT3618 Derivatives and risk management (6)

STAT3911 Financial economics II (6)

STAT4603 Current topics in risk management (6)

STAT4606 Risk management and Basel Accords in banking and

finance (6)

STAT4607 Credit risk analysis (6)

STAT4608 Market risk analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6)

STAT4799 Statistics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Risk Management

Offered to students admitted to Year 1 in

2013

Objectives:

The Major in Risk Management aims to provide students with the skills and expertise in the theory and methodology behind the scientific process of risk management, with application to actuarial science, finance and other related areas of interest. It is designed to provide solid training in the concepts of the risk management process, statistical models and methods of risk management, and good risk management practice. Core courses in the curriculum emphasize fundamental concepts and nature of risk assessment, risk management and governance from different standpoints while elective courses provide either training in specific Risk Management disciplines or an extension of knowledge aiming to give students more modeling, technical and analytical skills in risk management, including data mining, stochastic calculus, and financial time series modeling.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and categorize the various risks faced by an organization and be able to demonstrate a critical understanding of generic risk management issues and techniques
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) analyze and assess risk management situations, and be able to deal with qualitative as well as quantitative aspects appropriate to the situation
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) critically evaluate and make effective use of models and techniques for risk assessment and management, and appraise the related ethical issues
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) make informed risk management decisions, employ any techniques necessary to acquire and interpret relevant data and information from different sources and the factors that influence their perceptions of risk identification, risk reduction, risk mitigation and risk transfer
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on risk management issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) gain insights into current advances in risk management through either project or industrial training
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Statistics

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

STAT2601 Probability and statistics I (6)

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3609 The statistics of investment risk (6)

STAT3615 Practical mathematics for investment (6)

STAT4601 Time-series analysis (6)

Plus at least 24 credits selected from the following courses:

STAT3603 Probability modelling (6)

STAT3610 Risk management and insurance (6)

STAT3612 Data mining (6)

STAT3618 Derivatives and risk management (6)

STAT3911 Financial economics II (6)

STAT4603 Current topics in risk management (6)

STAT4606 Risk management and Basel Accords in banking and

finance (6)

STAT4607 Credit risk analysis (6)

STAT4608 Market risk analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6)

STAT4799 Statistics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Risk Management

Offered to students admitted to Year 1 in

2012

Objectives:

The Major in Risk Management aims to provide students with the skills and expertise in the theory and methodology behind the scientific process of risk management, with application to actuarial science, finance and other related areas of interest. It is designed to provide solid training in the concepts of the risk management process, statistical models and methods of risk management, and good risk management practice. Core courses in the curriculum emphasize fundamental concepts and nature of risk assessment, risk management and governance from different standpoints while elective courses provide either training in specific Risk Management disciplines or an extension of knowledge aiming to give students more modeling, technical and analytical skills in risk management, including data mining, stochastic calculus, and financial time series modeling.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and categorize the various risks faced by an organization and be able to demonstrate a critical understanding of generic risk management issues and techniques
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) analyze and assess risk management situations, and be able to deal with qualitative as well as quantitative aspects appropriate to the situation
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) critically evaluate and make effective use of models and techniques for risk assessment and management, and appraise the related ethical issues
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) make informed risk management decisions, employ any techniques necessary to acquire and interpret relevant data and information from different sources and the factors that influence their perceptions of risk identification, risk reduction, risk mitigation and risk transfer
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on risk management issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) gain insights into current advances in risk management through either project or industrial training
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Statistics

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

STAT2601 Probability and statistics I (6)

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3609 The statistics of investment risk (6)

STAT3615 Practical mathematics for investment (6)

STAT4601 Time-series analysis (6)

Plus at least 24 credits selected from the following courses:

STAT3603 Probability modelling (6)

STAT3610 Risk management and insurance (6)

STAT3612 Data mining (6)

STAT3618 Derivatives and risk management (6)

STAT3911 Financial economics II (6)

STAT4603 Current topics in risk management (6)

STAT4606 Risk management and Basel Accords in banking and

finance (6)

STAT4607 Credit risk analysis (6)

STAT4608 Market risk analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6)

STAT4799 Statistics project (12)

Notes:

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 2. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 3. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 4. Courses at the advanced level and capstone requirements are subject to change.
- 5. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of

selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.

Major Title Major in Statistics

Offered to students

2014

admitted to Year 1 in

Objectives:

The Major in Statistics focuses on the study of statistics, a scientific discipline characterized by the development and applications of analytical and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. The programme aims to equip students with powerful mathematical, analytical and computational skills, which are in great demand in practical areas where data are obtained for the purpose of extracting information in support of decision making. It gives students a strong background in statistical concepts, and provides broad and solid training in applied statistical methodologies. The curriculum is constantly revised to meet a steadily rising demand for specialist statisticians or quantitative analysts in government, business, finance, industry, as well as in research and teaching in local and overseas institutions.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) receive solid training in probability and statistics, gain insight into their underlying theory and be acquainted with their state-of-the-art applications in the modern world
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) conduct meticulous data analyses, supported by rigorous statistical reasoning, to make informed decisions in the face of uncertainty that arises in all sorts of institutions and companies, and appraise the related ethical issues (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) equip with hands-on experience in data analysis using commercial statistical software, and be competent for data-analytic jobs which require advanced computational skills
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) be highly motivated to explore cross-disciplinary applications of statistics in a broad variety of academic or professional areas including, in particular, mathematics, natural sciences, economics, finance, business, risk management, actuarial work, social sciences and engineering
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on probability and statistical issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) through the understanding and application of statistical concepts and techniques, gain confidence to meet challenges posed by increasingly complicated real-life problems encountered in the modern era in a creative and rational manner

(by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

MATH2014 Multivariable calculus and linear algebra (6)

STAT2601 Probability and statistics I (6)
STAT2602 Probability and statistics II (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3603 Probability modelling (6)

STAT4601 Time-series analysis (6)

STAT4602 Multivariate data analysis (6)

Plus at least 24 credits from Lists A and B, among which at least 6 credits from List A:

List A:

STAT3602 Statistical inference (6)

STAT3604 Design and analysis of experiments (6)

STAT3620 Modern nonparametric statistics (6)

STAT3621 Statistical data analysis (6)

List B:

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

(6)

STAT3608 Statistical genetics (6)

STAT3612 Data mining (6)

STAT3613 Marketing engineering (6)

STAT3616 Advanced SAS programming (6)

STAT3617 Sample survey methods (6)

STAT3955 Survival analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6) STAT4799 Statistics project (12)

Notes

1. Students who wish to specialize in the theme of data science are recommended to choose the combination of courses STAT3612, STAT3613, STAT3616 and STAT3621. Note that students who wish to take STAT3616 and STAT3621 are strongly recommended to take STAT2603 first.

- 2. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 3. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 4. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Major Title Major in Statistics

Offered to students

admitted to Year 1 in

2013

Objectives:

The Major in Statistics focuses on the study of statistics, a scientific discipline characterized by the development and applications of analytical and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. The programme aims to equip students with powerful mathematical, analytical and computational skills, which are in great demand in practical areas where data are obtained for the purpose of extracting information in support of decision making. It gives students a strong background in statistical concepts, and provides broad and solid training in applied statistical methodologies. The curriculum is constantly revised to meet a steadily rising demand for specialist statisticians or quantitative analysts in government, business, finance, industry, as well as in research and teaching in local and overseas institutions.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) receive solid training in probability and statistics, gain insight into their underlying theory and be acquainted with their state-of-the-art applications in the modern world
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) conduct meticulous data analyses, supported by rigorous statistical reasoning, to make informed decisions in the face of uncertainty that arises in all sorts of institutions and companies, and appraise the related ethical issues (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) equip with hands-on experience in data analysis using commercial statistical software, and be competent for data-analytic jobs which require advanced computational skills
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) be highly motivated to explore cross-disciplinary applications of statistics in a broad variety of academic or professional areas including, in particular, mathematics, natural sciences, economics, finance, business, risk management, actuarial work, social sciences and engineering
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on probability and statistical issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) through the understanding and application of statistical concepts and techniques, gain confidence to meet challenges posed by increasingly complicated real-life problems encountered in the modern era in a creative and rational manner

(by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

STAT2601 Probability and statistics I (6)
STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3603 Probability modelling (6)

STAT4601 Time-series analysis (6)

STAT4602 Multivariate data analysis (6)

Plus at least 24 credits from Lists A and B, among which at least 6 credits from List A:

List A:

STAT3602 Statistical inference (6)

STAT3604 Design and analysis of experiments (6)

STAT3620 Modern nonparametric statistics (6)

STAT3621 Statistical data analysis (6)

List B:

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

(6)

STAT3608 Statistical genetics (6)

STAT3612 Data mining (6)

STAT3613 Marketing engineering (6)

STAT3616 Advanced SAS programming (6)

STAT3617 Sample survey methods (6)

STAT3955 Survival analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6) STAT4799 Statistics project (12)

Notes

1. Students who wish to specialize in the theme of data science are recommended to choose the combination of courses STAT3612, STAT3613, STAT3616 and STAT3621. Note that students who wish to take STAT3616 and STAT3621 are strongly recommended to take STAT2603 first.

- 2. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 3. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 4. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Major Title Major in Statistics

Offered to students

admitted to Year 1 in

2012

Objectives:

The Major in Statistics focuses on the study of statistics, a scientific discipline characterized by the development and applications of analytical and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. The programme aims to equip students with powerful mathematical, analytical and computational skills, which are in great demand in practical areas where data are obtained for the purpose of extracting information in support of decision making. It gives students a strong background in statistical concepts, and provides broad and solid training in applied statistical methodologies. The curriculum is constantly revised to meet a steadily rising demand for specialist statisticians or quantitative analysts in government, business, finance, industry, as well as in research and teaching in local and overseas institutions.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) receive solid training in probability and statistics, gain insight into their underlying theory and be acquainted with their state-of-the-art applications in the modern world
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (2) conduct meticulous data analyses, supported by rigorous statistical reasoning, to make informed decisions in the face of uncertainty that arises in all sorts of institutions and companies, and appraise the related ethical issues (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (3) equip with hands-on experience in data analysis using commercial statistical software, and be competent for data-analytic jobs which require advanced computational skills
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (4) be highly motivated to explore cross-disciplinary applications of statistics in a broad variety of academic or professional areas including, in particular, mathematics, natural sciences, economics, finance, business, risk management, actuarial work, social sciences and engineering
- (by means of coursework, tutorial classes and/or project-based learning in the curriculum)
- (5) communicate and collaborate with people effectively on probability and statistical issues
- (by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)
- (6) through the understanding and application of statistical concepts and techniques, gain confidence to meet challenges posed by increasingly complicated real-life problems encountered in the modern era in a creative and rational manner

(by means of coursework, tutorial classes, project-based and/or capstone learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Minor in Risk Management

Minor in Statistics

Required courses (96 credits)

1. Introductory level courses (42 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning (6)

SCNC1112 Fundamentals of modern science (6)

Disciplinary Courses (30 credits)

MATH1013 University mathematics II (6)

STAT1600 Statistics: ideas and concepts (6)

STAT2601 Probability and statistics I (6)
STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (48 credits)

STAT3600 Linear statistical analysis (6)

STAT3603 Probability modelling (6)

STAT4601 Time-series analysis (6)

STAT4602 Multivariate data analysis (6)

Plus at least 24 credits from Lists A and B, among which at least 6 credits from List A:

List A:

STAT3602 Statistical inference (6)

STAT3604 Design and analysis of experiments (6)

STAT3620 Modern nonparametric statistics (6)

STAT3621 Statistical data analysis (6)

List B:

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

(6)

STAT3608 Statistical genetics (6)

STAT3612 Data mining (6)

STAT3613 Marketing engineering (6)

STAT3616 Advanced SAS programming (6)

STAT3617 Sample survey methods (6)

STAT3955 Survival analysis (6)

3. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT3799 Directed studies in statistics (6)

STAT4710 Capstone experience for statistics undergraduates (6)

STAT4766 Statistics internship (6) STAT4799 Statistics project (12)

Notes

- 1. Students who wish to specialize in the theme of data science are recommended to choose the combination of courses STAT3612, STAT3613, STAT3616 and STAT3621. Note that students who wish to take STAT3616 and STAT3621 are strongly recommended to take STAT2603 first.
- 2. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 3. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. Double counting of credits is not permissible for major-minor or double-minors combinations. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

- 4. Students are not required to take Capstone if this Science major is taken as a second major on the condition that the capstone experience in the first major requires the integration or application of knowledge from both major disciplines. If this is approved, a 6-credit advanced level course in the second major must be taken to fulfill the credit requirement of the capstone experience.
- 5. Courses at the advanced level and capstone requirements are subject to change.
- 6. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 7. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Science Minors on offer in 2014-15

SCIENCE

SECTION VII Science Minors on offer in 2014/15

Minors offered by Science Faculty

Minors (16)

Actuarial Studies

Astronomy

Biochemistry

Chemistry

Computational & Financial Mathematics

Earth Sciences

Ecology & Biodiversity

Environmental Science

Food & Nutritional Science

Marine Biology

Mathematics

Molecular Biology & Biotechnology

Physics

Plant Science

Risk Management

Statistics

Minor Title Minor in Actuarial Studies

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Actuarial Studies aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interests in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the methods used by actuaries to solve problems of insurance, investment, pension, financial risk management and demography
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)
- (2) develop and apply problem-solving skills appropriate to the level of the preliminary education component specified by international actuarial bodies such as the Society of Actuaries
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)

Impermissible Combination:

FINA1310

Bachelor of Science in Actuarial Science

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

Corporate finance (6)

MATH1013 University mathematics II (6)

STAT2601 Probability and statistics I (6)

STAT2602 Probability and statistics II (6)

STAT2605 Demographic and socio-economic statistics (6)

STAT2901 Probability and statistics: foundations of actuarial

science (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3615 Practical mathematics for investment (6)

STAT3901 Life contingencies (6)

STAT3904 Corporate finance for actuarial science (6)

STAT3906 Risk theory I (6)

STAT3908 Credibility theory and loss distributions (6)

STAT3910 Financial economics I (6)
STAT3911 Financial economics II (6)

STAT4903 Actuarial techniques for general insurance (6)

Notes:

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor

or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Actuarial Studies

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Actuarial Studies aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interests in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the methods used by actuaries to solve problems of insurance, investment, pension, financial risk management and demography
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)
- (2) develop and apply problem-solving skills appropriate to the level of the preliminary education component specified by international actuarial bodies such as the Society of Actuaries
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)

Impermissible Combination:

FINA1310

Bachelor of Science in Actuarial Science

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

Corporate finance (6)

MATH1013 University mathematics II (6)
STAT2601 Probability and statistics I (6)
STAT2602 Probability and statistics II (6)

STAT2605 Demographic and socio-economic statistics (6)
STAT2901 Probability and statistics: foundations of actuarial

riobability and statistics. Idundations of actuarial

science (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3615 Practical mathematics for investment (6)

STAT3901 Life contingencies (6)

STAT3904 Corporate finance for actuarial science (6)

STAT3906 Risk theory I (6)

STAT3908 Credibility theory and loss distributions (6)

STAT3910 Financial economics I (6)
STAT3911 Financial economics II (6)

STAT4903 Actuarial techniques for general insurance (6)

Notes:

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor

or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Actuarial Studies

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Actuarial Studies aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interests in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the methods used by actuaries to solve problems of insurance, investment, pension, financial risk management and demography
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)
- (2) develop and apply problem-solving skills appropriate to the level of the preliminary education component specified by international actuarial bodies such as the Society of Actuaries
- (by means of coursework and tutorial classes and/or research-based project in the curriculum)

Impermissible Combination:

FINA1310

STAT2605

Bachelor of Science in Actuarial Science

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

Corporate finance (6)

MATH1013 University mathematics II (6)
STAT2601 Probability and statistics I (6)
STAT2602 Probability and statistics II (6)

STAT2901 Probability and statistics: foundations of actuarial

Demographic and socio-economic statistics (6)

science (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3615 Practical mathematics for investment (6)

STAT3901 Life contingencies (6)

STAT3904 Corporate finance for actuarial science (6)

STAT3906 Risk theory I (6)

STAT3908 Credibility theory and loss distributions (6)

STAT3910 Financial economics I (6)
STAT3911 Financial economics II (6)

STAT4903 Actuarial techniques for general insurance (6)

Notes:

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor

or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks

Minor Title Minor in Astronomy

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Astronomy is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses to allow them to pursue their interests in the subject and to establish connections between the field of astronomy and other science disciplines.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe astrophysical phenomena with fundamental knowledge in physics
- (by means of coursework and tutorial classes in the curriculum)
- (2) develop their scientific intuition, abilities and techniques to tackle astrophysical problems either theoretical or observational in nature
- (by means of coursework, tutorial classes, and opportunities of field activities in the curriculum)
- (3) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Astronomy

Required courses (42 credits)

1. Introductory level courses (18 credits)

PHYS1250 Fundamental physics (6)

PHYS1650 Nature of the universe (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

PHYS3650 Observational astronomy (6)

PHYS3651 The physical universe (6)

PHYS3652 Principles of astronomy (6)

PHYS4650 Stellar physics (6)

PHYS4651 Selected topics in astrophysics (6)

PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4654 General relativity (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Astronomy

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Astronomy is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses to allow them to pursue their interests in the subject and to establish connections between the field of astronomy and other science disciplines.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe astrophysical phenomena with fundamental knowledge in physics
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- (by means of coursework, tutorial classes, and opportunities of field activities in the curriculum)
- (3) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Astronomy

Required courses (42 credits)

1. Introductory level courses (18 credits)

PHYS1250 Fundamental physics (6)

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2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

PHYS3650 Observational astronomy (6)

PHYS3651 The physical universe (6)

PHYS3652 Principles of astronomy (6)

PHYS4650 Stellar physics (6)

PHYS4651 Selected topics in astrophysics (6)

PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4654 General relativity (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Astronomy

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Astronomy is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses to allow them to pursue their interests in the subject and to establish connections between the field of astronomy and other science disciplines.

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- (by means of coursework and tutorial classes in the curriculum)
- (2) develop their scientific intuition, abilities and techniques to tackle astrophysical problems either theoretical or observational in nature
- (by means of coursework, tutorial classes, and opportunities of field activities in the curriculum)
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PHYS3650 Observational astronomy (6)

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PHYS4650 Stellar physics (6)

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PHYS4652 Planetary science (6)

PHYS4653 Cosmology (6)

PHYS4654 General relativity (6)

PHYS4655 Interstellar medium (6)

PHYS6650

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Biochemistry

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Biochemistry is designed to provide students from all backgrounds with a multidisciplinary perspective on contemporary biochemistry and molecular biology. This minor curriculum incorporates significant flexibility to allow students to select courses that will complement the individual student's Major.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the fundamentals of biochemistry and molecular biology, and apply biochemical knowledge appropriately and effectively
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) integrate knowledge regarding the structure and function of biological molecules and how they come together to form the systems that make up life
- (by means of coursework and laboratory-based learning in the curriculum)
- (3) develop a general interest in biochemistry and recognize the inter-relationship of biochemistry with other disciplines

(by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Biochemistry

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOC1600 Perspectives in biochemistry (6)

BIOL1110 From molecules to cells (6)

BIOC2600 Basic biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOC4610 Advanced biochemistry (6)

BIOC4612 Molecular biology of the gene (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4444 Chemical biology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Biochemistry

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Biochemistry is designed to provide students from all backgrounds with a multidisciplinary perspective on contemporary biochemistry and molecular biology. This minor curriculum incorporates significant flexibility to allow students to select courses that will complement the individual student's Major.

Learning Outcomes:

By the end of this programme, students should be able to:

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Impermissible Combination:

Major in Biochemistry

Required courses (36 credits)

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At least 12 credits selected from the following courses:

BIOC1600 Perspectives in biochemistry (6)

BIOL1110 From molecules to cells (6)

BIOC2600 Basic biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOC4610 Advanced biochemistry (6)

BIOC4612 Molecular biology of the gene (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4444 Chemical biology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Biochemistry

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Biochemistry is designed to provide students from all backgrounds with a multidisciplinary perspective on contemporary biochemistry and molecular biology. This minor curriculum incorporates significant flexibility to allow students to select courses that will complement the individual student's Major.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) describe the fundamentals of biochemistry and molecular biology, and apply biochemical knowledge appropriately and effectively
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) integrate knowledge regarding the structure and function of biological molecules and how they come together to form the systems that make up life
- (by means of coursework and laboratory-based learning in the curriculum)
- (3) develop a general interest in biochemistry and recognize the inter-relationship of biochemistry with other disciplines

(by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Biochemistry

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOC1600 Perspectives in biochemistry (6)

BIOL1110 From molecules to cells (6)

BIOC2600 Basic biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOC3601 Basic Metabolism (6)

BIOC3604 Essential techniques in biochemistry and molecular

biology (6)

BIOC3605 Sequence bioinformatics (6)

BIOC3606 Molecular medicine (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3401 Molecular biology (6)

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3404 Protein structure and function (6)

BIOC4610 Advanced biochemistry (6)

BIOC4612 Molecular biology of the gene (6)

BIOC4613 Advanced techniques in biochemistry & molecular

biology (6)

BIOL4417 'Omics' and systems biology (6)

CHEM4444 Chemical biology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Chemistry

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Chemistry aims to provide students with fundamental knowledge and skills of chemistry. The minor curriculum is flexible. Students of different majors in science and other disciplines will be able to select courses that complement their major areas of study as well as enhance their knowledge in chemistry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the basic concepts of chemistry
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) apply chemistry concepts in other subjects
- (by means of coursework and laboratory-based learning in the curriculum)
- (3) transfer the basic concepts to complement their major area of study
- (by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Chemistry

Required courses (42 credits)

1. Introductory level courses (18 credits)

CHEM1042 General chemistry I (6)

Plus at least 12 credits selected from the following courses:

CHEM2041 Principles of chemistry (6)
CHEM2241 Analytical chemistry I (6)
CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6) CHEM2441 and CHEM2442

are mutually exclusive.

CHEM2442 Fundamentals of organic chemistry (6)

CHEM2441 and CHEM2442 are mutually exclusive.

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level), subject to prerequisite requirements.

Notes

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fuifill this requirement are advised to take CHEM1041 Foundations of chemistry.

Remarks:

Minor Title Minor in Chemistry

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Chemistry aims to provide students with fundamental knowledge and skills of chemistry. The minor curriculum is flexible. Students of different majors in science and other disciplines will be able to select courses that complement their major areas of study as well as enhance their knowledge in chemistry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the basic concepts of chemistry
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) apply chemistry concepts in other subjects
- (by means of coursework and laboratory-based learning in the curriculum)
- (3) transfer the basic concepts to complement their major area of study
- (by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Chemistry

Required courses (42 credits)

1. Introductory level courses (18 credits)

CHEM1042 General chemistry I (6)

Plus at least 12 credits selected from the following courses:

CHEM2041 Principles of chemistry (6)
CHEM2241 Analytical chemistry I (6)
CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6) CHEM2441 and CHEM2442

are mutually exclusive.

CHEM2442 Fundamentals of organic chemistry (6)

CHEM2441 and CHEM2442 are mutually exclusive.

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level), subject to prerequisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fuifill this requirement are advised to take CHEM1041 Foundations of chemistry.

Remarks:

Minor Title Minor in Chemistry

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Chemistry aims to provide students with fundamental knowledge and skills of chemistry. The minor curriculum is flexible. Students of different majors in science and other disciplines will be able to select courses that complement their major areas of study as well as enhance their knowledge in chemistry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and apply the basic concepts of chemistry
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) apply chemistry concepts in other subjects
- (by means of coursework and laboratory-based learning in the curriculum)
- (3) transfer the basic concepts to complement their major area of study
- (by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Chemistry

Required courses (42 credits)

1. Introductory level courses (18 credits)

CHEM1042 General chemistry I (6)

Plus at least 12 credits selected from the following courses:

CHEM2041 Principles of chemistry (6)
CHEM2241 Analytical chemistry I (6)
CHEM2341 Inorganic chemistry I (6)

CHEM2441 Organic chemistry I (6) CHEM2441 and CHEM2442

are mutually exclusive.

CHEM2442 Fundamentals of organic chemistry (6)

CHEM2441 and CHEM2442 are mutually exclusive.

CHEM2541 Introductory Physical Chemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Chemistry courses (CHEM3XXX or CHEM4XXX level), subject to prerequisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Chemistry or equivalent to take this major. Students who do not fuifill this requirement are advised to take CHEM1041 Foundations of chemistry.

Remarks:

Minor Title Minor in Computational & Financial Mathematics

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Computational & Financial Mathematics provides students with fundamental knowledge in both computational mathematics and financial mathematics. It is specifically designed for students who are interested in the above subjects and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving and skills to tackle novel situations and ill-defined problems. It is particularly useful for solving mathematical problems arising from computational sciences and financial industry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe fundamental concepts in computational and financial mathematics
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics Minor in Mathematics

Required courses (42 credits)

1. Introductory level courses (18 credits) (note 4)

MATH1013 University mathematics II (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

2. Advanced level courses (24 credits)

MATH3601 Numerical analysis (6)
MATH3906 Financial calculus (6)

Plus at least 12 credits selected from the following courses:

MATH3408 Computational methods and differential equations with

applications (6)

MATH3603 Probability theory (6)

MATH3904 Introduction to optimization (6)
MATH3911 Game theory and strategy (6)

MATH4602 Scientific computing (6)

MATH4907 Numerical methods for financial calculus (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take

this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.

- 4. Students having completed the two courses MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II are deemed to have satisfied the 18 credits Introductory Level Courses requirement of Computational & Financial Mathematics Minor. Such students should, however, take two extra MATH2XXX or above level courses to replace MATH2101 Linear algebra I and MATH2211 Multivariable calculus, and at least 30 credits of advanced level Mathematics courses (including MATH3601 & MATH3906) as chosen from the minor structure in order to fulfil the credit requirement of the Minor.
- 5. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Minor Title Minor in Computational & Financial Mathematics

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Computational & Financial Mathematics provides students with fundamental knowledge in both computational mathematics and financial mathematics. It is specifically designed for students who are interested in the above subjects and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving and skills to tackle novel situations and ill-defined problems. It is particularly useful for solving mathematical problems arising from computational sciences and financial industry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe fundamental concepts in computational and financial mathematics
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics Minor in Mathematics

Required courses (42 credits)

1. Introductory level courses (18 credits) (note 4)

MATH1013 University mathematics II (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

2. Advanced level courses (24 credits)

MATH3601 Numerical analysis (6)
MATH3906 Financial calculus (6)

Plus at least 12 credits selected from the following courses:

MATH3408 Computational methods and differential equations with

applications (6)

MATH3603 Probability theory (6)

MATH3904 Introduction to optimization (6)
MATH3911 Game theory and strategy (6)

MATH4602 Scientific computing (6)

MATH4907 Numerical methods for financial calculus (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take

this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.

- 4. Students having completed the two courses MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II are deemed to have satisfied the 18 credits Introductory Level Courses requirement of Computational & Financial Mathematics Minor. Such students should, however, take two extra MATH2XXX or above level courses to replace MATH2101 Linear algebra I and MATH2211 Multivariable calculus, and at least 30 credits of advanced level Mathematics courses (including MATH3601 & MATH3906) as chosen from the minor structure in order to fulfil the credit requirement of the Minor.
- 5. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Minor Title Minor in Computational & Financial Mathematics

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Computational & Financial Mathematics provides students with fundamental knowledge in both computational mathematics and financial mathematics. It is specifically designed for students who are interested in the above subjects and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving and skills to tackle novel situations and ill-defined problems. It is particularly useful for solving mathematical problems arising from computational sciences and financial industry.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe fundamental concepts in computational and financial mathematics
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics Minor in Mathematics

Required courses (42 credits)

1. Introductory level courses (18 credits) (note 4)

MATH1013 University mathematics II (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

2. Advanced level courses (24 credits)

MATH3601 Numerical analysis (6)
MATH3906 Financial calculus (6)

Plus at least 12 credits selected from the following courses:

MATH3408 Computational methods and differential equations with

applications (6)

MATH3603 Probability theory (6)

MATH3904 Introduction to optimization (6)
MATH3911 Game theory and strategy (6)

MATH4602 Scientific computing (6)

MATH4907 Numerical methods for financial calculus (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take

this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.

- 4. Students having completed the two courses MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II are deemed to have satisfied the 18 credits Introductory Level Courses requirement of Computational & Financial Mathematics Minor. Such students should, however, take two extra MATH2XXX or above level courses to replace MATH2101 Linear algebra I and MATH2211 Multivariable calculus, and at least 30 credits of advanced level Mathematics courses (including MATH3601 & MATH3906) as chosen from the minor structure in order to fulfil the credit requirement of the Minor.
- 5. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Remarks:

Minor Title Minor in Earth Sciences

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Earth Sciences aims to provide interested students with an introduction to the fundamental structure, process and history of the Earth. The minor curriculum is designed particularly to provide students from different majors the flexibility to select courses to enhance their interests in Earth Sciences or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe the methods used by the Earth scientists to study the Earth systems
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (2) understand and describe the basic nomenclature used in Earth Sciences
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (3) discuss and comment critically issues related to the Earth Sciences in media reports
- (by means to coursework, tutorial classes and field-based learning in the curriculum)

Impermissible Combination:

Major in Earth System Science Major in Geology

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Earth Sciences courses (EASC3XXX or EASC4XXX level), subject to prerequisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Earth Sciences

Offered to students

admitted to Year 1 in

2013

Objectives:

The Minor in Earth Sciences aims to provide interested students with an introduction to the fundamental structure, process and history of the Earth. The minor curriculum is designed particularly to provide students from different majors the flexibility to select courses to enhance their interests in Earth Sciences or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe the methods used by the Earth scientists to study the Earth systems
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (2) understand and describe the basic nomenclature used in Earth Sciences
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (3) discuss and comment critically issues related to the Earth Sciences in media reports
- (by means to coursework, tutorial classes and field-based learning in the curriculum)

Impermissible Combination:

Major in Earth System Science Major in Geology

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Earth Sciences courses (EASC3XXX or EASC4XXX level), subject to prerequisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Earth Sciences

Offered to students

2012

admitted to Year 1 in

Objectives:

The Minor in Earth Sciences aims to provide interested students with an introduction to the fundamental structure, process and history of the Earth. The minor curriculum is designed particularly to provide students from different majors the flexibility to select courses to enhance their interests in Earth Sciences or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe the methods used by the Earth scientists to study the Earth systems
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (2) understand and describe the basic nomenclature used in Earth Sciences
- (by means to coursework, tutorial classes and field-based learning in the curriculum)
- (3) discuss and comment critically issues related to the Earth Sciences in media reports
- (by means to coursework, tutorial classes and field-based learning in the curriculum)

Impermissible Combination:

Major in Earth System Science Major in Geology

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

EASC1401 Blue Planet (6)

EASC1402 Principles of geology (6)

EASC2401 Fluid/solid interactions in earth processes (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Earth Sciences courses (EASC3XXX or EASC4XXX level), subject to prerequisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2014

Objectives:

This Minor in Ecology & Biodiversity is an ideal introduction to the natural world, the species and ecosystems it comprises and the biological rules it follows. It aims to allow students to learn about general ecological principles and the local flora and fauna of the region, and the conservation challenges that will need to be addressed in a rapidly-changing world. Students will be able to build upon this basic knowledge developed at the introductory level by selecting from among a wide range of courses that offer learning opportunities through practical and field work, as well as traditional and virtual teaching, in more specialized areas of ecology and biodiversity.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate and describe the importance of ecology and biodiversity, and the importance of the variety of life to humans
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) understand and describe the impacts of environmental change and the causes and consequences of biodiversity loss
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) appreciate and describe the ecological principles underlying different policies and plans for biodiversity conservation and sustainable development in Hong Kong and elsewhere
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Ecology & Biodiversity

Required courses (36 credits)

,		
1. Introductory level courses (12 credits)		
BIOL1309	Evolutionary diversity (6)	
BIOL2306	Ecology and evolution (6)	
2. Advanced lev	vel courses (24 credits)	
BIOL3301	Marine biology (6)	
BIOL3302	Systematics and phylogenetics (6)	
BIOL3303	Conservation ecology (6)	
BIOL3313	Freshwater ecology (6)	
BIOL3314	Plant structure and evolution (6)	
BIOL3318	Experimental intertidal ecology (6)	
BIOL3319	Terrestrial ecology (6)	
BIOL3320	The biology of marine mammals (6)	
BIOL4301	Fish and fisheries (6)	
BIOL4302	Environmental impact assessment (6)	
BIOL4303	Animal behaviour (6)	

Notes

^{1.} Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks

Minor Title Minor in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2013

Objectives:

This Minor in Ecology & Biodiversity is an ideal introduction to the natural world, the species and ecosystems it comprises and the biological rules it follows. It aims to allow students to learn about general ecological principles and the local flora and fauna of the region, and the conservation challenges that will need to be addressed in a rapidly-changing world. Students will be able to build upon this basic knowledge developed at the introductory level by selecting from among a wide range of courses that offer learning opportunities through practical and field work, as well as traditional and virtual teaching, in more specialized areas of ecology and biodiversity.

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- (2) understand and describe the impacts of environmental change and the causes and consequences of biodiversity loss
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) appreciate and describe the ecological principles underlying different policies and plans for biodiversity conservation and sustainable development in Hong Kong and elsewhere
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Ecology & Biodiversity

1. Introductory level courses (12 credits)			
BIOL1309	Evolutionary diversity (6)		
BIOL2306	Ecology and evolution (6)		
2. Advanced leve	el courses (24 credits)		
BIOL3301	Marine biology (6)		
BIOL3302	Systematics and phylogenetics (6)		
BIOL3303	Conservation ecology (6)		
BIOL3313	Freshwater ecology (6)		
BIOL3314	Plant structure and evolution (6)		
BIOL3318	Experimental intertidal ecology (6)		
BIOL3319	Terrestrial ecology (6)		
BIOL3320	The biology of marine mammals (6)		
BIOL4301	Fish and fisheries (6)		
BIOL4302	Environmental impact assessment (6)		
BIOL4303	Animal behaviour (6)		

Notes

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2. Courses at the advanced level are subject to change.

Remarks

Minor Title Minor in Ecology & Biodiversity

Offered to students admitted to Year 1 in

2012

Objectives:

This Minor in Ecology & Biodiversity is an ideal introduction to the natural world, the species and ecosystems it comprises and the biological rules it follows. It aims to allow students to learn about general ecological principles and the local flora and fauna of the region, and the conservation challenges that will need to be addressed in a rapidly-changing world. Students will be able to build upon this basic knowledge developed at the introductory level by selecting from among a wide range of courses that offer learning opportunities through practical and field work, as well as traditional and virtual teaching, in more specialized areas of ecology and biodiversity.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate and describe the importance of ecology and biodiversity, and the importance of the variety of life to humans
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) understand and describe the impacts of environmental change and the causes and consequences of biodiversity loss
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) appreciate and describe the ecological principles underlying different policies and plans for biodiversity conservation and sustainable development in Hong Kong and elsewhere
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Ecology & Biodiversity

Required o	courses (36	credits)
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1. Introductory level courses (12 credits)		
BIOL1309	Evolutionary diversity (6)	
BIOL2306	Ecology and evolution (6)	
2. Advanced leve	el courses (24 credits)	
BIOL3301	Marine biology (6)	
BIOL3302	Systematics and phylogenetics (6)	
BIOL3303	Conservation ecology (6)	
BIOL3313	Freshwater ecology (6)	
BIOL3314	Plant structure and evolution (6)	
BIOL3318	Experimental intertidal ecology (6)	
BIOL3319	Terrestrial ecology (6)	
BIOL3320	The biology of marine mammals (6)	
BIOL4301	Fish and fisheries (6)	
BIOL4302	Environmental impact assessment (6)	

Notes:

BIOL4303

Animal behaviour (6)

^{1.} Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Environmental Science

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Environmental Science aims to provide students with an introduction to some complex environmental issues. Students will gain ecological and physical knowledge of the environment, become literate in issues related to environmental sustainability, monitoring and management, and be able to explore interdisciplinary solutions to these problems. This training will help student understand certain aspects of the environment and possible ways to solving environmental problems which will be useful to students to enhance their career prospects.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Major in Environmental Science

Required courses (42 credits)

1. Introductory level courses (18 credits)

ENVS1401 Introduction to environmental science (6)

Plus at least 12 credits selected from the following courses (Level 1 & 2):

CHEM1042 General chemistry I (6)

CHEM2041 Principles of chemistry (6)

EASC1020 Introduction to climate science (6)

EASC1401 Blue Planet (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

ENVS1301 Environmental life science (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (24 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 18 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

BIOL4302 Environmental impact assessment (6)

CHEM3141 Environmental chemistry (6)

CHEM3241	Analytical chemistry II: chemical instrumentation (6)	
CHEM3242	Food and water analysis (6)	
EASC3020	Global change: anthropogenic impacts (6)	
EASC3405	Environmental remote sensing (6)	
ENVS3006	Environmental radiation (6)	
ENVS3007	Natural hazards and mitigation (6)	
ENVS3010	Sustainable energy and environment (6)	
ENVS3019	Urban ecology (6)	
ENVS3020	Global change ecology (6)	
ENVS3042	Pollution (6)	
ENVS3313	Environmental oceanography (6)	
ENVS4110	Environmental remediation (6)	

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Environmental Science

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Environmental Science aims to provide students with an introduction to some complex environmental issues. Students will gain ecological and physical knowledge of the environment, become literate in issues related to environmental sustainability, monitoring and management, and be able to explore interdisciplinary solutions to these problems. This training will help student understand certain aspects of the environment and possible ways to solving environmental problems which will be useful to students to enhance their career prospects.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Major in Environmental Science

Required courses (42 credits)

1. Introductory level courses (18 credits)

ENVS1401 Introduction to environmental science (6)

Plus at least 12 credits selected from the following courses (Level 1 & 2):

CHEM1042 General chemistry I (6)

CHEM2041 Principles of chemistry (6)

EASC1020 Introduction to climate science (6)

EASC1401 Blue Planet (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

ENVS1301 Environmental life science (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (24 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 18 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

BIOL4302 Environmental impact assessment (6)

CHEM3141 Environmental chemistry (6)

l 1	
CHEM3241	Analytical chemistry II: chemical instrumentation (6)
CHEM3242	Food and water analysis (6)
EASC3020	Global change: anthropogenic impacts (6)
EASC3405	Environmental remote sensing (6)
ENVS3006	Environmental radiation (6)
ENVS3007	Natural hazards and mitigation (6)
ENVS3010	Sustainable energy and environment (6)
ENVS3019	Urban ecology (6)
ENVS3020	Global change ecology (6)
ENVS3042	Pollution (6)
ENVS3313	Environmental oceanography (6)
ENVS4110	Environmental remediation (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Environmental Science

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Environmental Science aims to provide students with an introduction to some complex environmental issues. Students will gain ecological and physical knowledge of the environment, become literate in issues related to environmental sustainability, monitoring and management, and be able to explore interdisciplinary solutions to these problems. This training will help student understand certain aspects of the environment and possible ways to solving environmental problems which will be useful to students to enhance their career prospects.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe different components of the environmental systems and key issues in environmental science
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (2) observe, describe, measure and analyze physical, biological and chemical characteristics of natural and manmade environments
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (3) appropriately use and critically analyze a range of forms and sources of environmental data, and assess environmental problems
- (by means of lectures, coursework, tutorial classes and field/ laboratory/ team-based learning in the curriculum)
- (4) gain skills in scientific inquiry and effective communication of global environmental problems, issues of resource management, policies and management methods

(by means of field/ laboratory/ team-based learning, research projects, presentation opportunities and capstone experiences in the curriculum)

Impermissible Combination:

Major in Environmental Science

Required courses (42 credits)

1. Introductory level courses (18 credits)

ENVS1401 Introduction to environmental science (6)

Plus at least 6 credits selected from the following courses (Level 1):

CHEM1042 General chemistry I (6)

EASC1401 Blue Planet (6)

ENVS1301 Environmental life science (6)

Plus at least 6 credits selected from the following courses (Level 2):

BIOL2102 Biostatistics (6)

CHEM2041 Principles of chemistry (6)

EASC2404 Introduction to atmosphere and hydrosphere (6)

ENVS2001 Environmental field and lab course (6)

ENVS2002 Environmental data analysis (6)

2. Advanced level courses (24 credits)

ENVS3004 Environment, society and economics (6)

Plus at least 18 credits selected from the following courses:

BIOL3110 Environmental toxicology (6)

BIOL3303 Conservation ecology (6)

BIOL4302 Environmental impact assessment (6)

CHEM3141	Environmental chemistry (6)
CHEM3241	Analytical chemistry II: chemical instrumentation (6)
CHEM3242	Food and water analysis (6)
EASC3020	Global change: anthropogenic impacts (6)
EASC3405	Environmental remote sensing (6)
ENVS3006	Environmental radiation (6)
ENVS3007	Natural hazards and mitigation (6)
ENVS3010	Sustainable energy and environment (6)
ENVS3019	Urban ecology (6)
ENVS3020	Global change ecology (6)
ENVS3042	Pollution (6)
ENVS3313	Environmental oceanography (6)
ENVS4110	Environmental remediation (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Food & Nutritional Science

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Food and Nutritional Science aims to provide a comprehensive education in food, nutrition and related sociological and technological topics, enabling graduates to develop their interest in food and nutrition and have a wide range of employment and progression options.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate broad knowledge in the field of food and nutritional science
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) recognize and describe the health risks associated with food and specific nutrients, and discuss how to prevent these risks
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand and describe ethical perspectives and practice in food product development, food safety and public health nutrition
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) synthesize and summarize information from a wide range of sources and draw reasoned conclusions with particular reference to food and nutritional sciences and related global and commercial issues (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Food & Nutritional Science

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

BIOL4205	Food processing and engineering (6)
BIOL4207	Meat and dairy sciences (6)
BIOL4209	Functional foods (6)
BIOL4210	Food product development (6)
BIOL4411	Plant and food biotechnology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Food & Nutritional Science

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Food and Nutritional Science aims to provide a comprehensive education in food, nutrition and related sociological and technological topics, enabling graduates to develop their interest in food and nutrition and have a wide range of employment and progression options.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate broad knowledge in the field of food and nutritional science
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) recognize and describe the health risks associated with food and specific nutrients, and discuss how to prevent these risks
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand and describe ethical perspectives and practice in food product development, food safety and public health nutrition
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) synthesize and summarize information from a wide range of sources and draw reasoned conclusions with particular reference to food and nutritional sciences and related global and commercial issues (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Food & Nutritional Science

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

ВІС	DL4205	Food processing and engineering (6)
ВІС	DL4207	Meat and dairy sciences (6)
BIC	DL4209	Functional foods (6)
ВІС	DL4210	Food product development (6)
ВІС	DL4411	Plant and food biotechnology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Food & Nutritional Science

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Food and Nutritional Science aims to provide a comprehensive education in food, nutrition and related sociological and technological topics, enabling graduates to develop their interest in food and nutrition and have a wide range of employment and progression options.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) demonstrate broad knowledge in the field of food and nutritional science
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (2) recognize and describe the health risks associated with food and specific nutrients, and discuss how to prevent these risks
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (3) understand and describe ethical perspectives and practice in food product development, food safety and public health nutrition
- (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)
- (4) synthesize and summarize information from a wide range of sources and draw reasoned conclusions with particular reference to food and nutritional sciences and related global and commercial issues (by means of coursework, tutorial classes and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Food & Nutritional Science

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1201 Introduction to food and nutrition (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3201 Food chemistry (6)

BIOL3202 Nutritional biochemistry (6)

BIOL3203 Food microbiology (6)

BIOL3204 Nutrition and the life cycle (6)

BIOL3205 Human physiology (6)

BIOL3206 Clinical nutrition (6)

BIOL3207 Food and nutritional toxicology (6)

BIOL3208 Food safety and quality management (6)

BIOL3209 Food and nutrient analysis (6)

BIOL3210 Grain production and utilization (6)

BIOL3211 Nutrigenomics (6)

BIOL4201 Public health nutrition (6)

BIOL4204 Diet, brain function and behavior (6)

BIOL420	Food processing and en	gineering (6)
BIOL420	Meat and dairy sciences	s (6)
BIOL420	9 Functional foods (6)	
BIOL421	Food product developme	ent (6)
BIOL441	1 Plant and food biotechno	ology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Marine Biology

Offered to students admitted to Year 1 in

2014

Objectives:

The field of marine biology has become increasingly popular as interest in and awareness of our marine environment grows. Hong Kong already has strong cultural and historical links with the sea as well as a strong economic and societal interest in natural marine resources. This Minor aims to introduce students to the field of marine biology from species, habitat and ecosystem levels, ranging from the deep ocean to intertidal environments, and from both theoretical and practical perspectives. Material will be global and include organisms and their physical, behavioral and physiological adaptations to the marine environment, as well as techniques for marine study, Major marine issues will be covered including benefits derived from the marine environment and possible implications of climate change for marine systems. Particularly relevant examples from Hong Kong and the Southeast Asia region will be highlighted. This minor will provide students from diverse backgrounds (e.g.business, engineering and social science) an excellent opportunity to enter into a career or research in marine environment-related fields such as coastal ecosystem management, fisheries, marine environmental protection, marine resource management, etc.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate the requirements and constraints to life in different marine environments
- (by means of coursework, labtoratory-based, and tutorial classes and project-based learning in the curriculum)
- (2) gain a comprehensive foundation for pursuing marine-orientated studies
- (by means of coursework, labtoratory-based, and tutorial classes and project-based learning in the curriculum)
- (3) have a general insight into an ecosystem that covers two-thirds of the planet and supports the only remaining natural resource harvested on a large scale
- (by means of coursework, labtoratory-based, and tutorial classes and project-based learning in the curriculum)
- (4) understand the major marine issues both locally and globally
- (by means of coursework, labtoratory-based, and tutorial classes and project-based learning in the curriculum)
- (5) appreciate the possible implications of climate change on marine systems
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)

Impermissible Combination:

NIL

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1309 Evolutionary diversity (6)

ENVS1301 Environmental life science (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (24 credits)

BIOL3301 Marine biology (6)

ENVS3313 Environmental oceanography (6)

Plus at least 12 credits selected from the following courses:

BIOL3303 Conservation ecology (6)

BIOL3318 Experimental intertidal ecology (6)

BIOL3320 The biology of marine mammals (6)

BIOL4301 Fish and fisheries (6)

Notes:

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course

appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Marine Biology

Offered to students admitted to Year 1 in

2013

Objectives:

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Impermissible Combination:

NIL

Required courses (36 credits)

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At least 12 credits selected from the following courses:

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BIOL2306 Ecology and evolution (6)

2. Advanced level courses (24 credits)

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Plus at least 12 credits selected from the following courses:

BIOL3303 Conservation ecology (6)

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BIOL3320 The biology of marine mammals (6)

BIOL4301 Fish and fisheries (6)

Notes:

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course

appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Marine Biology

Offered to students admitted to Year 1 in

2012

Objectives:

The field of marine biology has become increasingly popular as interest in and awareness of our marine environment grows. Hong Kong already has strong cultural and historical links with the sea as well as a strong economic and societal interest in natural marine resources. This Minor aims to introduce students to the field of marine biology from species, habitat and ecosystem levels, ranging from the deep ocean to intertidal environments, and from both theoretical and practical perspectives. Material will be global and include organisms and their physical, behavioral and physiological adaptations to the marine environment, as well as techniques for marine study, Major marine issues will be covered including benefits derived from the marine environment and possible implications of climate change for marine systems. Particularly relevant examples from Hong Kong and the Southeast Asia region will be highlighted. This minor will provide students from diverse backgrounds (e.g.business, engineering and social science) an excellent opportunity to enter into a career or research in marine environment-related fields such as coastal ecosystem management, fisheries, marine environmental protection, marine resource management, etc.

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- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)

Impermissible Combination:

NIL

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

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BIOL3303 Conservation ecology (6)

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BIOL3320 The biology of marine mammals (6)

BIOL4301 Fish and fisheries (6)

Notes

1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course

appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.

2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Mathematics

Offered to students

admitted to Year 1 in

Objectives:

The Minor in Mathematics provides students with fundamental knowledge in the subject. It is specifically designed for students who are interested in the subject and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems.

Learning Outcomes:

By the end of this programme, students should be able to:

(1) understand and describe fundamental concepts of mathematics

2014

- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics.
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Required courses (36 credits)

1. Introductory level courses (18 credits) (note 5)

MATH1013 University mathematics II (6)

MATH2101 Linear algebra I (6)

MATH2211 Multivariable calculus (6)

2. Advanced level courses (18 credits)

At least 18 credits of advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), subject to pre-requisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 4. If students would like to take more courses in analysis such as MATH3401 (Analysis I), they are advised to take the introductory course MATH2241 Introduction to mathematical analysis first.
- 5. Students having completed the two courses MATH1821 Mathematical methods for actuarial Science I and MATH2822 Mathematical methods for actuarial science II are deemed to have satisfied the 18 credits introductory level courses requirement of Mathematics minor. Such students should, however, take two extra MATH2XXX or above level courses to replace MATH2101 Linear algebra I and MATH2211 Multivariable calculus, and at least 24 credits of advanced level Mathematics courses in order to fulfil the credit requirement of the Minor.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Minor Title Minor in Mathematics

Offered to students 2

admitted to Year 1 in

2013

Objectives:

The Minor in Mathematics provides students with fundamental knowledge in the subject. It is specifically designed for students who are interested in the subject and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe fundamental concepts of mathematics
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics.
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Required courses (36 credits)

1. Introductory level courses (18 credits) (note 5)

MATH1013 University mathematics II (6)

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2. Advanced level courses (18 credits)

At least 18 credits of advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), subject to pre-requisite requirements.

Notes:

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- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 4. If students would like to take more courses in analysis such as MATH3401 (Analysis I), they are advised to take the introductory course MATH2241 Introduction to mathematical analysis first.
- 5. Students having completed the two courses MATH1821 Mathematical methods for actuarial Science I and MATH2822 Mathematical methods for actuarial science II are deemed to have satisfied the 18 credits introductory level courses requirement of Mathematics minor. Such students should, however, take two extra MATH2XXX or above level courses to replace MATH2101 Linear algebra I and MATH2211 Multivariable calculus, and at least 24 credits of advanced level Mathematics courses in order to fulfil the credit requirement of the Minor.
- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Minor Title Minor in Mathematics

Offered to students

admitted to Year 1 in

2012

Objectives:

The Minor in Mathematics provides students with fundamental knowledge in the subject. It is specifically designed for students who are interested in the subject and those whose majors require sophisticated mathematical skills. It aims to nurture quantitative reasoning, logical, analytical and critical thinking, innovative imagination, meticulous care to work, ability to conceptualize, skills for problem-solving, and capability to tackle novel situations and ill-defined problems.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) understand and describe fundamental concepts of mathematics
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply mathematical methods and analysis to real life problems
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) communicate and discuss scientific issues related to mathematics.
- (by means of coursework, tutorial classes and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics

Major in Mathematics/Physics

Minor in Computational & Financial Mathematics

Required courses (36 credits)

1. Introductory level courses (18 credits) (note 5)

MATH1013 University mathematics II (6)

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MATH2211 Multivariable calculus (6)

2. Advanced level courses (18 credits)

At least 18 credits of advanced level Mathematics courses (MATH3XXX or MATH4XXX or MATH6XXX level), subject to pre-requisite requirements.

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics or equivalent to take this major. Students who do not fulfill this requirement are advised to take MATH1011 University mathematics I.
- 4. If students would like to take more courses in analysis such as MATH3401 (Analysis I), they are advised to take the introductory course MATH2241 Introduction to mathematical analysis first.
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- 6. The two courses MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics together are deemed equivalent to MATH1013 University mathematics II. However, students have to take an extra MATH2XXX or above level course to replace MATH1013 to fulfill the credit requirement.

Minor Title Minor in Molecular Biology & Biotechnology

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Molecular Biology & Biotechnology aims to provide students with a fundamental understanding of molecular biology and biotechnology which are relevant to many other disciplines of study and our daily life. Students will learn the principles underlying current molecular and cell biology advances, and biotechnological applications and will become literate in biotechnology business and advancements.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) develop and apply basic technical and knowledge-based skills in molecular and cell biology, and biotechnology
- (by means of coursework and laboratory-based learning in the curriculum)
- (2) develop and apply skills of critical inquiry, teamwork, and effective communication
- (by means of group projects, tutorial classes and presentation opportunities in the curriculum)
- (3) understand and describe the issues and concerns fundamental to the field
- (by means of coursework and laboratory-based learning in the curriculum)

Impermissible Combination:

Major in Molecular Biology & Biotechnology

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOC2600 Basic biochemistry (6) May take either BIOL2220 or

BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (24 credits)

BIOL3401 Molecular biology (6)

Plus at least 18 credits selected from the following courses:

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

BIOL4402 Microbial biotechnology (6)

BIOL4411 Plant and food biotechnology (6)

BIOL4415 Healthcare biotechnology (6)

BIOL4416 Stem cells and regenerative biology (6)

BIOL4417 'Omics' and systems biology (6)
ENVS4110 Environmental remediation (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Molecular Biology & Biotechnology

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Molecular Biology & Biotechnology aims to provide students with a fundamental understanding of molecular biology and biotechnology which are relevant to many other disciplines of study and our daily life. Students will learn the principles underlying current molecular and cell biology advances, and biotechnological applications and will become literate in biotechnology business and advancements.

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- (3) understand and describe the issues and concerns fundamental to the field
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Impermissible Combination:

Major in Molecular Biology & Biotechnology

Required courses (36 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOC2600 Basic biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (24 credits)

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Plus at least 18 credits selected from the following courses:

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

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ENVS4110 Environmental remediation (6)

Notes:

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Remarks:

Minor Title Minor in Molecular Biology & Biotechnology

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2012

Objectives:

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BIOL1110 From molecules to cells (6)

BIOL2220 Principles of biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOC2600 Basic biochemistry (6)

May take either BIOL2220 or BIOC2600 to fulfill this 12 credits requirement, but not

both.

BIOL2102 Biostatistics (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2306 Ecology and evolution (6)

2. Advanced level courses (24 credits)

BIOL3401 Molecular biology (6)

Plus at least 18 credits selected from the following courses:

BIOL3402 Cell biology and cell technology (6)

BIOL3403 Immunology (6)

BIOL3409 Business aspects of biotechnology (6)

BIOL4401 Medical microbiology and applied immunology (6)

BIOL4402 Microbial biotechnology (6)

BIOL4411 Plant and food biotechnology (6)

BIOL4415 Healthcare biotechnology (6)

BIOL4416 Stem cells and regenerative biology (6)

BIOL4417 'Omics' and systems biology (6)
ENVS4110 Environmental remediation (6)

Notes

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Physics

Offered to students 2014

admitted to Year 1 in

Objectives:

The Minor in Physics is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses which provides them to pursue a wide range of topics from the very small scale of nanomaterials to the large scale of astrophysics.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with fundamental knowledge in physics
- (by means of coursework and tutorial classes in the curriculum)
- (2) analyze some physics problems qualitatively and quantitatively
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics/Physics

Major in Physics

Required courses (42 credits)

1. Introductory level courses (18 credits)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

Notes

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Physics

Offered to students 2013

admitted to Year 1 in

Objectives:

The Minor in Physics is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses which provides them to pursue a wide range of topics from the very small scale of nanomaterials to the large scale of astrophysics.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with fundamental knowledge in physics
- (by means of coursework and tutorial classes in the curriculum)
- (2) analyze some physics problems qualitatively and quantitatively
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics/Physics

Major in Physics

Required courses (42 credits)

1. Introductory level courses (18 credits)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

Notes

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Physics

Offered to students 2012

admitted to Year 1 in

Objectives:

The Minor in Physics is intended to provide interested students with a fundamental outlook on the subject. Students would acquire a taste of the subject through a large selection of elective courses which provides them to pursue a wide range of topics from the very small scale of nanomaterials to the large scale of astrophysics.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with fundamental knowledge in physics
- (by means of coursework and tutorial classes in the curriculum)
- (2) analyze some physics problems qualitatively and quantitatively
- (by means of coursework, tutorial classes and laboratory works in the curriculum)
- (3) communicate and collaborate with people effectively in scientific issues
- (by means of group projects, tutorial sessions and presentation opportunities in the curriculum)

Impermissible Combination:

Major in Mathematics/Physics

Major in Physics

Required courses (42 credits)

1. Introductory level courses (18 credits)

PHYS1250 Fundamental physics (6)

PHYS2250 Introductory mechanics (6)

PHYS2265 Modern physics (6)

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Physics courses (PHYS3XXX or PHYS4XXX or PHYS6XXX level), subject to prerequisite requirements.

Notes

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.
- 3. Students must have level 3 or above in HKDSE Physics or equivalent to take this major. Students who do not fulfill this requirement are advised to take PHYS1240 Physics by inquiry.

Remarks:

Minor Title Minor in Plant Science

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Plant Science is offered to students who are fascinated by the diversity and beauty of plants and the molecular mechanisms underlying their growth and development. Knowledge in plant science is essential for tackling daily-life issues such as the production of high-quality food, utilization of plant products as biofuels and extraction of beneficial phytochemicals. Recent advances in plant genetic engineering have also allowed scientists to manipulate plant growth and development for nutritional and environmental benefits. This minor aims to provide broad training in the biology of plants from the molecular to the organism level as well as the agricultural and nutritional applications of plants and plant-derived products.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate plants as an important part in our culture and their functions and roles in food, nutrition, and environment
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (2) understand and describe the fundamental concepts of plant evolution, anatomy, biochemistry, physiology and biotechnology
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (3) acquire necessary academic and practical skills for careers in government agencies, secondary school teaching and postgraduate research in different disciplines of plant science

(by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)

Impermissible Combination:

NIL

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3107 Plant physiology (6)

BIOL3210 Grain production and utilization (6)

BIOL3314 Plant structure and evolution (6)

BIOL3408 Genetics (6)

BIOL4209 Functional foods (6)

BIOL4411 Plant and food biotechnology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Minor Title Minor in Plant Science

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Plant Science is offered to students who are fascinated by the diversity and beauty of plants and the molecular mechanisms underlying their growth and development. Knowledge in plant science is essential for tackling daily-life issues such as the production of high-quality food, utilization of plant products as biofuels and extraction of beneficial phytochemicals. Recent advances in plant genetic engineering have also allowed scientists to manipulate plant growth and development for nutritional and environmental benefits. This minor aims to provide broad training in the biology of plants from the molecular to the organism level as well as the agricultural and nutritional applications of plants and plant-derived products.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate plants as an important part in our culture and their functions and roles in food, nutrition, and environment
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (2) understand and describe the fundamental concepts of plant evolution, anatomy, biochemistry, physiology and biotechnology
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (3) acquire necessary academic and practical skills for careers in government agencies, secondary school teaching and postgraduate research in different disciplines of plant science

(by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)

Impermissible Combination:

NIL

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3107 Plant physiology (6)

BIOL3210 Grain production and utilization (6)

BIOL3314 Plant structure and evolution (6)

BIOL3408 Genetics (6)

BIOL4209 Functional foods (6)

BIOL4411 Plant and food biotechnology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Minor Title Minor in Plant Science

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Plant Science is offered to students who are fascinated by the diversity and beauty of plants and the molecular mechanisms underlying their growth and development. Knowledge in plant science is essential for tackling daily-life issues such as the production of high-quality food, utilization of plant products as biofuels and extraction of beneficial phytochemicals. Recent advances in plant genetic engineering have also allowed scientists to manipulate plant growth and development for nutritional and environmental benefits. This minor aims to provide broad training in the biology of plants from the molecular to the organism level as well as the agricultural and nutritional applications of plants and plant-derived products.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) appreciate plants as an important part in our culture and their functions and roles in food, nutrition, and environment
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (2) understand and describe the fundamental concepts of plant evolution, anatomy, biochemistry, physiology and biotechnology
- (by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)
- (3) acquire necessary academic and practical skills for careers in government agencies, secondary school teaching and postgraduate research in different disciplines of plant science

(by means of coursework, labtoratory-based, and tutorial class and project-based learning in the curriculum)

Impermissible Combination:

NIL

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits selected from the following courses:

BIOL1110 From molecules to cells (6)

BIOL1309 Evolutionary diversity (6)

BIOL2103 Biological sciences laboratory course (6)

BIOL2220 Principles of biochemistry (6)

2. Advanced level courses (24 credits)

At least 24 credits selected from the following courses:

BIOL3107 Plant physiology (6)

BIOL3210 Grain production and utilization (6)

BIOL3314 Plant structure and evolution (6)

BIOL3408 Genetics (6)

BIOL4209 Functional foods (6)

BIOL4411 Plant and food biotechnology (6)

Notes:

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Minor Title Minor in Risk Management

Offered to students admitted to Year 1 in

2014

Objectives:

The Minor in Risk Management aims to provide interested students with basic concepts of risk management and fundamental skills of employing various statistical techniques for managing risk. The minor curriculum is particularly designed for students from different majors to enhance their interests in Risk Management or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) acquire basic understanding and identify the generic risk management issues and techniques
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply elementary methods and models for risk assessment and management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) acquire and interpret relevant data and information for risk management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Statistics

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

STAT1602 Business statistics (6)

STAT1603 Introductory statistics (6)

STAT2601 Probability and statistics I (6)

List B

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3609 The statistics of investment risk (6)

STAT3610 Risk management and insurance (6)

STAT3611 Computer-aided data analysis (6)

STAT3612 Data mining (6)

STAT3614 Business forecasting (6)

STAT3615 Practical mathematics for investment (6)

STAT3618 Derivatives and risk management (6)

STAT4601 Time-series analysis (6)

STAT4603 Current topics in risk management (6)

STAT4606	Risk management and Basel Accords in banking and finance (6)	
STAT4607	Credit risk analysis (6)	
STAT4608	Market risk analysis (6)	

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Risk Management

Offered to students admitted to Year 1 in

2013

Objectives:

The Minor in Risk Management aims to provide interested students with basic concepts of risk management and fundamental skills of employing various statistical techniques for managing risk. The minor curriculum is particularly designed for students from different majors to enhance their interests in Risk Management or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) acquire basic understanding and identify the generic risk management issues and techniques
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply elementary methods and models for risk assessment and management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) acquire and interpret relevant data and information for risk management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Statistics

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

STAT1602 Business statistics (6)

STAT1603 Introductory statistics (6)

STAT2601 Probability and statistics I (6)

List B

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3609 The statistics of investment risk (6)

STAT3610 Risk management and insurance (6)

STAT3611 Computer-aided data analysis (6)

STAT3612 Data mining (6)

STAT3614 Business forecasting (6)

STAT3615 Practical mathematics for investment (6)

STAT3618 Derivatives and risk management (6)

STAT4601 Time-series analysis (6)

STAT4603 Current topics in risk management (6)

STAT4606	Risk management and Basel Accords in banking and finance (6)	
STAT4607	Credit risk analysis (6)	
STAT4608	Market risk analysis (6)	

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks

Minor Title Minor in Risk Management

Offered to students admitted to Year 1 in

2012

Objectives:

The Minor in Risk Management aims to provide interested students with basic concepts of risk management and fundamental skills of employing various statistical techniques for managing risk. The minor curriculum is particularly designed for students from different majors to enhance their interests in Risk Management or to complement their major of study.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) acquire basic understanding and identify the generic risk management issues and techniques
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) apply elementary methods and models for risk assessment and management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (3) acquire and interpret relevant data and information for risk management
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Statistics

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

STAT1602 Business statistics (6)

STAT1603 Introductory statistics (6)

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List B

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3609 The statistics of investment risk (6)

STAT3610 Risk management and insurance (6)

STAT3611 Computer-aided data analysis (6)

STAT3612 Data mining (6)

STAT3614 Business forecasting (6)

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STAT3618 Derivatives and risk management (6)

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STAT4606	Risk management and Basel Accords in banking and finance (6)	
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- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Statistics

Offered to students admitted to Year 1 in

2014

Objectives:

The curriculum of the Minor in Statistics is structured specifically to cater for the general need of non-statistical disciplines and provide basic training in statistical methodologies and their applications to practical problems. It aims to provide students with a strong and rigorous sense of quantitative reasoning that has become an indispensable skill in nearly all disciplines.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) acquire basic statistical knowledge alongside their major disciplines, with emphases on correct applications of statistical methods and insightful interpretations of statistical findings
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) equip with computational skills essential to conducting complete data analyses
- (by means of coursework, tutorial classes, project-based learning and presentation opportunities in the curriculum)
- (3) participate proactively in large-scale, multi-disciplinary studies, determine objective findings, and provide guidance on all aspects of data collection and analyses
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Risk Management

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

STAT1602 Business statistics (6)

STAT1603 Introductory statistics (6)

STAT2601 Probability and statistics I (6)

List B

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

STAT2605 Demographic and socio-economic statistics (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3600 Linear statistical analysis (6)

STAT3602 Statistical inference (6)

STAT3603 Probability modelling (6)

STAT3604 Design and analysis of experiments (6)

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

	(6)
STAT3608	Statistical genetics (6)
STAT3611	Computer-aided data analysis (6)
STAT3612	Data mining (6)
STAT3613	Marketing engineering (6)
STAT3614	Business forecasting (6)
STAT3616	Advanced SAS programming (6)
STAT3617	Sample survey methods (6)
STAT3620	Modern nonparametric statistics (6)
STAT3621	Statistical data analysis (6)
STAT3955	Survival analysis (6)
STAT4601	Time-series analysis (6)
STAT4602	Multivariate data analysis (6)

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Statistics

Offered to students admitted to Year 1 in

2013

Objectives:

The curriculum of the Minor in Statistics is structured specifically to cater for the general need of non-statistical disciplines and provide basic training in statistical methodologies and their applications to practical problems. It aims to provide students with a strong and rigorous sense of quantitative reasoning that has become an indispensable skill in nearly all disciplines.

Learning Outcomes:

By the end of this programme, students should be able to:

- (1) acquire basic statistical knowledge alongside their major disciplines, with emphases on correct applications of statistical methods and insightful interpretations of statistical findings
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- (2) equip with computational skills essential to conducting complete data analyses
- (by means of coursework, tutorial classes, project-based learning and presentation opportunities in the curriculum)
- (3) participate proactively in large-scale, multi-disciplinary studies, determine objective findings, and provide guidance on all aspects of data collection and analyses
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Risk Management

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

STAT1602 Business statistics (6)

STAT1603 Introductory statistics (6)

STAT2601 Probability and statistics I (6)

List B

STAT2602 Probability and statistics II (6)

STAT2603 Data management with SAS (6)

STAT2605 Demographic and socio-economic statistics (6)

2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

STAT3600 Linear statistical analysis (6)

STAT3602 Statistical inference (6)

STAT3603 Probability modelling (6)

STAT3604 Design and analysis of experiments (6)

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

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		(6)
	STAT3608	Statistical genetics (6)
	STAT3611	Computer-aided data analysis (6)
	STAT3612	Data mining (6)
	STAT3613	Marketing engineering (6)
	STAT3614	Business forecasting (6)
	STAT3616	Advanced SAS programming (6)
	STAT3617	Sample survey methods (6)
	STAT3620	Modern nonparametric statistics (6)
	STAT3621	Statistical data analysis (6)
	STAT3955	Survival analysis (6)
	STAT4601	Time-series analysis (6)
	STAT4602	Multivariate data analysis (6)
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- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Minor Title Minor in Statistics

Offered to students admitted to Year 1 in

2012

Objectives:

The curriculum of the Minor in Statistics is structured specifically to cater for the general need of non-statistical disciplines and provide basic training in statistical methodologies and their applications to practical problems. It aims to provide students with a strong and rigorous sense of quantitative reasoning that has become an indispensable skill in nearly all disciplines.

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By the end of this programme, students should be able to:

- (1) acquire basic statistical knowledge alongside their major disciplines, with emphases on correct applications of statistical methods and insightful interpretations of statistical findings
- (by means of coursework, tutorial classes and project-based learning in the curriculum)
- (2) equip with computational skills essential to conducting complete data analyses
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- (3) participate proactively in large-scale, multi-disciplinary studies, determine objective findings, and provide guidance on all aspects of data collection and analyses
- (by means of coursework, tutorial classes and project-based learning in the curriculum)

Impermissible Combination:

Major in Risk Management

Major in Statistics

Minor in Risk Management

Required courses (42 credits)

1. Introductory level courses (12 credits)

At least 12 credits from List A and List B, with at least 6 credits from List B:

List A

STAT1601 Elementary statistical methods (6)

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STAT1603 Introductory statistics (6)

STAT2601 Probability and statistics I (6)

List B

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2. Advanced level courses (30 credits)

At least 30 credits selected from the following courses:

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STAT3603 Probability modelling (6)

STAT3604 Design and analysis of experiments (6)

STAT3605 Quality control and management (6)

STAT3606 Business logistics (6)

STAT3607 Statistics in clinical medicine and bio-medical research

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		(6)
	STAT3608	Statistical genetics (6)
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	STAT3612	Data mining (6)
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	STAT4602	Multivariate data analysis (6)
11		

- 1. Double counting of credits is not permissible for major-minor or double-minors combinations. For a course appears as a core course ("must take") in the major-minor or double-minors, students have to make up the credits by taking replacement course in the minor. For details, please refer to "Students taking double Majors, Major-Minor or double Minors with overlapping course requirements" in the BSc syllabuses.
- 2. Courses at the advanced level are subject to change.

Remarks:

Students taking double Majors,

Major-Minor or double Minors with overlapping course requirements

SCIENCE

SECTION VIII Students taking double Majors, Major-Minor or double Minors with overlapping course requirements

- 1. Double-counting of courses up to a maximum of 24 credits is permissible when a student with a science major opts to undertake a second major in science.
- 2. The double-counted courses must include SCNC1111 Scientific method and reasoning (6 credits) and SCNC1112 Fundamentals of modern science (6 credits). Additional credits to be double-counted must be for courses required ('must take') by both majors.
- 3. For cases with 24 or less double-counted credits, the student must make up an equivalent number of credits by taking other courses offered by any Faculty.
- 4. If more than 24 credits (including SCNC1111 & SCNC1112) are listed as required courses ("must take") in both the first and second majors undertaken by a student, the student must make up the number of credits above the 24 permissible by taking replacement course(s) in the second major. The replacement course(s) must have the same prefix and at the same or higher level as the double-counted course(s).
- 5. Double counting of credits is not permissible for major–minor or double-minors combinations. When a course is required ("must take") both by the major and minor or by both minors, the student must take a replacement course for the minor. The replacement course must have the same prefix and at the same or higher level as the course to be replaced.
- 6. For situations 4 and 5 above, students have to complete the form "Application for Taking a Replacement Course for the Course Required in Two Different Majors/Minors."

Course Descriptions of BSc and

Language Courses

SCIENCE

BIOC1600 Perspectives in	biochemis	try (6 credits)	Academic	Year	2014			
Offering Department	Biochemis	try	Quota					
Course Co-ordinator	Dr J Tann	Dr J Tanner, Biochemistry (jatanner@hku.hk)						
Teachers Involved	Dr L Y L C Dr J Tann	Wong, Biochemistry cheng, Biochemistry er, Biochemistry Wong, Biochemistry						
Course Objectives - Teach students a biochemical perspective on each of the Basic Sciences focusing on fundamental to the learning of Biochemistry Promote deep learning of course material through an integrated programme of practical and col tasks Inspire students with a view of the great discoveries and future challenges for Biochemistry Help students make the transition from school to university by developing their teamwork, ind study skills and confidence to communicate within a Biochemistry learning environment.					and collaborative			
Course Contents & Topics	A Biochen	nical Perspective on the Basic Sciences						
	The element electron);	ertry for Biochemistry ents and bonding (from carbon to Coenzyme A Structure and conformation (thinking in 3 dimen e universal biochemical solvent) & buffer; C	nsions); Isomerism (fro	m mirror	s to thalidomide)			
	The basic	for Biochemistry building blocks of life (proteins, DNA, lipids, ovolution (considering molecular evolution); Original Considering molecular evolution (considering molecular evolution).						
	Thermody melting); \$	s and Mathematics for Biochemistry namics from a Biological Perspective; Introduc Statistics for biochemistry (applied statistics for vials, logs and the limits of life).						
	The prote	g Biochemistry n; The gene; Vitamins and disease; Synthetic cesses and failures.	biology; The challenge	s of mod	dern-day genetic			
Course Learning Outcomes	On succes	ssful completion of this course, students should	On successful completion of this course, students should be able to:					
	sciences o	e the basics of biomolecular structure from a ch of biology, chemistry and physics into a biochem	nemical perspective, the nical perspective.	•				
	sciences of 2. Apply I molecular 3. Interpre 4. Demor presentati 5. Relate	of biology, chemistry and physics into a biochem cnowledge of biomolecular structure to review biology. t scientific data and discuss major issues in bioconstrate skills in working and collaborating to control of scientific ideas. In the scientific ideas.	nemical perspective, the nical perspective. major discoveries and chemistry using the scie ogether with colleague sciences of biology, cl	d content entific lite es in p	nporary issues in erature. racticals and in			
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	Project reports	group communication project	30
Required/recommended reading and online materials	TBC		

BIOC2600 Basic biochemi	stry (6 cred	aits)		Academic Year	2014	
Offering Department	Biochemis	try		Quota	300	
Course Co-ordinator	Prof D K Y	Prof D K Y Shum, Biochemistry (shumdkhk@hku.hk)				
Teachers Involved	Dr J A Tar	Prof D K Y Shum, Biochemistry Dr J A Tanner, Biochemistry Dr B C W Wong, Biochemistry				
Course Objectives	process. V and non-s	This course is designed to present an overview of biochemistry of fundamental importance to the life process. We aim to develop appreciation of the basics in biochemistry as a common ground for science and non-science students to progress into their areas of specialization. Students intending to pursue further studies in Biochemistry and Molecular Biology will find this course particularly helpful.				
Course Contents & Topics	enzymes;	Structure and functions of carbohydrates, lipids, nucleic acids, amino acids and proteins; enzymes and co enzymes; basic bioenergetics; key metabolic processes in a living cell; signaling across cell membranes; flow of genetic information				
Course Learning Outcomes	On succes	ssful completion of this course, stud	ents should be able to:			
	 Explain Explain 	1. Relate structures to functions of biomolecules. 2. Explain the functions of key metabolic processes. 3. Explain the significance of signaling across cell membranes 4. Explain the flow of genetic information				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in BIOC1600 Perspectives in biochemistry or BIOL1110 From molecules to cells; and Not for students who have passed in BIOL2220 Principles of biochemistry or already enrolled in this course.				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrates thorough and complete mastery of the entire range of knowledge and analytical skills as required for maximal attainment in all the course learning outcomes; excellence in critical thinking towards application of the knowledge in a range of contexts. B Demonstrates substantial command of a broad range of knowledge and analytical skills as required for attainment of the majority of course learning outcomes; good evidence of critical thinking towards application of the knowledge in a range of contexts.					
	С	Demonstrates general but incomplete command of knowledge and analytical skills as required for attainment of adequate course learning outcomes; some evidence critical thinking towards application of the knowledge in a range of contexts.				
	D	Demonstrates partial but limited command of knowledge and analytical skills as required for attainment of som the course learning outcomes; limited evidence of critical thinking towards application of the knowledge in a rang contexts.				
	Fail	Demonstrates little or no evidence of coucourse learning outcomes; lacking in critic				
Course Type	Lecture-ba	ased course				
Course Teaching & Learning Activities	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignments				20	
	Examination				60	
	Test				20	
Required/recommended reading	Test Nelson DL, Cox MM (2008) Lehninger Principles of Biochemistry, 5th ed. W.H. Freeman, New York. Any other Biochemistry textbooks, e.g. Berg JM, Tymoczko JL, Stryer L (2012) Biochemistry, 7th ed. W.Freeman, New York.					

BIOC3601 Basic Metab	Academic Year	2014				
Offering Department	Biochemistry Quota					
Course Co-ordinator	Dr N S Wong, Biochemistry (nswong@hku.hk)					
Teachers Involved	Dr N S Wong, Biochemistry Dr Lydia Cheng, Biochemistry					
Course Objectives	This course aims to provide foundation concepts of metabolism. It will enable students of this course to see how some of the basic concepts in biochemistry (specifically those learned in BIOC1600 and					
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Required/recommended reading and online materials		Tymoczko JL, Stryer L (2007) Bioche	emistry, 6th ed. W.H. Freeman, New Yo with Clinical Correlations, 6th ed. Wiley			
	Assignments			20		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Reading	/ Self study		100		
	Tutorials		working on problems relating to the lecture topics	12		
& Learning Activities	Lectures		glycolysis; gluconeogenesis; pentose phosphate pathway; glycogen metabolis; lipid metabolis; purine and pyrimidine metabolism; regulation and integration of metabolic pathways	36		
Course Teaching & Learning Activities	Activitie	3	Details	No. of Hours		
Course Type	Lecture-ba	ased course				
	Fail Demonstrates little or no evidence of knowledge and skills required for attaining the course learning outcomes. Lacks analytical ability and logical thinking and is unable to apply knowledge to solve problems. Ineffective at communicating ideas.					
	D Demonstrates limited knowledge and skills required for attaining some of the course learning outcomes. Shows poor analytical ability and logical thinking and is rarely able to apply knowledge to solve problems. Has difficulty in expressing ideas coherently.					
	C Demonstrates general but incomplete knowledge and skills required for attaining most of the course learning outcomes. Shows evidence of some analytical ability and logical thinking and is sometimes able to apply knowledge to familiar or uncomplicated situations. Sometimes communicates ideas clearly.					
	B Demonstrates substantial knowledge and skills required for attaining most of the course learning outcomes. Shows evidence of analytical ability and logical thinking and is sometimes able to apply knowledge to complex situations. Often communicates complex ideas clearly.					
Grade Descriptors	A Demonstrates thorough and extensive knowledge and skills required for attaining all the course learning outcomes. Displays a strong analytical ability and logical thinking and is able to apply knowledge to a wide range of complex situations. Consistently able to communicate sophisticated ideas confidently and clearly.					
Course Grade	A+ to F					
Offer in 2015 - 2016	Υ					
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in BIOC2600 Basic Biochemistry or BIOL2220 Principles of Biochemistry or MEDE2301 Life science I (Biochemistry)				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the significance of individual steps in a metabolic pathway. 2. Recognize the importance and the need for regulation of metabolic pathways. 3. Discuss the roles of enzymes in the regulation of metabolic pathways. 4. Describe how metabolic process are integrated under different physiological and pathological conditions.					
	organisms. Major metabolic pathways covered in this course include those that are involved in the synthesis and breakdown of glucose, glycogen, triacylglycerol, and amino acids. The metabolism of purines and pyrimidines will also be considered. Emphasis is on the understanding of the metabolic reactions involved and how they are regulated in relation to environmental cues. Metabolic derangements as a basis of diseases will also be discussed.					
Course Contents & Topics	This cours	e focuses on the central metabolic p	eathways involved in the provision of en	ergy needed by living		
	BIOC2600) could be applied to explain one of the most important and cardinal issues of biological life acquisition of metabolic energy. The course will lay the foundation for the more advanced courses off in the Biochemistry Major and will also serve as a useful complement to courses on nutrition.					

BIOC3602 Understanding	C3602 Understanding metabolism diseases (6 credits) Academic Year 20				
Offering Department	Biochemistry	Quota 40			
Course Co-ordinator	Dr L Y L Cheng, Biochemistry (Icheng @hku.hk)				
Teachers Involved	Dr L Y L Cheng, Biochemistry				
Course Objectives	To strengthen students' understanding of metabolism. By using a problem-based learning (PBL) approach, students are trained in critical thinking and problem-solving skills. Students will be able to grasp the major effects on metabolic integration and control and they can use these concepts with greater confidence and success in approaching new problems and new areas of study.				
Course Contents & Topics	Knowledge of major pathways is applied to the understanding of diseas course will be delivered in the form of lectures, presentations, etc. at aids to illustrate the major concepts of metabolic diseases. The second in a tutorial format in which students are given cases to analyse references. Metabolic disturbances which lead to diabetes will be discussed.	nd supplemented wit I half of the course w and search for solu	th audio-visual vill be delivered		

Course Learning Outcomes	On succ	On successful completion of this course, students should be able to:				
	 Illustra Explai 	 Apply the knowledge of major metabolic pathways to the understanding of disease mechanisms. Illustrate the major concepts of metabolic diseases and discuss the metabolic disturbances in diseases. Explain the importance of metabolic integration and control. Develop critical thinking, problem-solving and presentation skills. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in I	Pass in BIOC3601 Basic Metabolism				
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrates thorough and extensive know Shows strong analytical ability and logical th wide range of complex situations. Presents i	inking in the critique of scien	ntific data and is able to	apply knowledge to a	
	В	Demonstrates substantial knowledge and skills required for attaining most of the course learning outcomes. Shows evidence of analytical ability and logical thinking in the critique of scientific data and is often able to apply knowledge to a wide range of complex situations. Presents ideas coherently and collaborates effectively with peers.				
	С	C Demonstrates general but incomplete knowledge and skills required for attaining most of the course learning outcomes. Shows evidence of some analytical ability and logical thinking in the critique of scientific data and is sometimes to apply knowledge to familiar situations. Has difficulty in presenting ideas coherently and collaborates passively with peers.				
	D	Demonstrates partial but limited knowledge and skills required for attaining some of the course learning outcomes. Shows poor analytical ability and logical thinking in the critique of scientific data and is rarely able to apply knowledge to solve problems. Lacks clarity when presenting ideas and reluctantly collaborates with peers.				
	Fail	Fail Demonstrates little or no evidence of knowledge and skills required for attaining the course learning outcomes. Lacks of analytical ability and logical thinking in the critique of scientific data and is unable to apply knowledge to solve problems. Incoherent presentation skills and unable to collaborate with others.				
Course Type	Lecture-	based course				
Course Teaching	Activiti	Activities Details			No. of Hours	
& Learning Activities	Lecture	S			36	
	Tutorial	S			12	
	Reading	g / Self study			100	
Assessment Methods and Weighting	Method	ls	Details		leighting in final course grade (%)	
	Assignn	nents			50	
	Examin	ation			50	
Required/recommended reading and online materials	TBC					

BIOC3604 Essential techn credits)	iques in biochemistry and molecular biology (6	Academic Year	2014			
Offering Department	Biochemistry	Quota	60			
Course Co-ordinator	Dr K M Yao, Biochemistry (kmyao@hku.hk)					
Teachers Involved	Prof D K Y Shum, Biochemistry Dr B C W Wong, Biochemistry Dr N S Wong, Biochemistry Dr K M Yao, Biochemistry Dr Z J Zhou, Biochemistry					
Course Objectives	To give students a general overview of different experimental approaches and model systems, and to provide students with hands-on experience in basic biochemical and molecular techniques.					
Course Contents & Topics	Basic concepts in experimental science; writing of lab notebooks; experimental approaches - genetic, biochemical, molecular, genomic and others; methods for isolation and analysis of carbohydrates, proteins, lipids and nucleic acids; subcellular fractionation; enzyme assays and spectrophotometry; basic nucleic acid manipulation - PCR, site-directed mutagenesis, blotting and hybridization, cloning strategies, restriction mapping.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the basic principles of various biochemical and molecular techniques. 2. Describe different experimental approaches for achieving defined experimental aims. 3. Apply different techniques to biochemical and molecular analyses. 4. Write and maintain a scientific laboratory notebook satisfactorily.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of Biochemistry or Biochemis	chemistry				
Offer in 2014 - 2015	Y 2nd sem	Examination	May			
Offer in 2015 - 2016	Υ		·			
Course Grade	A+ to F					

Grade Descriptors	A	A Demonstrates thorough and extensive knowledge and skills required for attaining all the course learning outcomes. Shows strong analytical ability and logical thinking, with evidence of original thought. Competently conducts laboratory skills and techniques with confidence and can critically appraise data to draw appropriate and insightful conclusions.					
	В	B Demonstrates substantial knowledge and skills required for attaining most of the course learning outcomes. Shows evidence of critical thinking and analytical skills. Conducts laboratory skills and techniques with confidence and can appraise data to draw appropriate conclusions.					
	С	Demonstrates general but incomplete knowledge and skills required for attaining most of the course learning outcomes. Shows some evidence of critical thinking and analytical skills. Conducts laboratory skills and techniques to a satisfactory level of competence and can sometimes correctly appraise data and draw appropriate conclusions.					
	D	Demonstrates partial but limited knowledge and skills required for attaining some of the course learning outcomes. Shows limited critical thinking and analytical skills. Displays poor laboratory skills and techniques and is rarely able to use data to draw appropriate conclusions.					
	Fail		e of knowledge and skills required for attain ng. Displays ineffective lab skills and techr				
Course Type	Lecture w	ith laboratory component cour	se				
Course Teaching	Activities		Details	No. of Hours			
& Learning Activities	Lectures			12			
	Laboratory			54			
	Tutorials			6			
	Reading / Self study			76			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments			50			
	Examination			50			
Required/recommended reading and online materials	Cox MM, Doudna JA and O'Donnell M (2012) Molecular Biology: Principles and Practice, Macmillan. Scopes RK (1994) Protein Purification: Principles and Practice. Springer Advanced Texts in Chemistry, Springer-Verlag, New York. Wilson K, Walker KM (2005) Principles and Techniques of Biochemistry and Molecular Biology. Cambridge University Press, Cambridge.						

BIOC3605 Sequence bioin	formatics (6 credits)	Academic Year	2014					
Offering Department	Biochemist	ry	Quota	50					
Course Co-ordinator	Dr B C W \	Dr B C W Wong, Biochemistry (bcwwong@hku.hk)							
Teachers Involved	Dr B C W \	Dr B C W Wong, Biochemistry							
Course Objectives	underlying retrieve, a	This course will examine existing bioinformatics tools for DNA and protein sequence analysis. The underlying principles of these analysis programs and services will be presented. Students will learn how to retrieve, analyze, and compare protein and DNA sequences using bioinformatics tools available on the World Wide Web.							
Course Contents & Topics	DNA and Entrez and alignment,	This course will introduce and discuss the following topics: DNA and protein sequence database, protein family databases; information searching and retrieval - Entrez and SRS; Simple sequence analysis; sequence alignment: pair-wise alignment, multiple sequence alignment, substitution matrices; sequence database searching: algorithm and parameters; sequence patterns and motifs, and profiles; phylogenetic analysis; gene prediction.							
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Search and retrieve sequence information from biological databases. 2. Describe the algorithms for pairwise and multiple alignments, BLAST search, and phylogenetic tre construction. 3. Perform sequence analysis using EMBOSS package and other web-based analysis tools. 4. Interpret results from sequence alignments and BLAST database searches. 5. Use results from various sequence analysis tools to annotate a biological sequence.								
Pre-requisites (and Co-requisites and Impermissible combination)		OC2600 Basic biochemistry or BIOL2220 Principles of BBMS2007 Essential molecular biology	biochemistry or B	BMS2003 Humar					
Offer in 2014 - 2015	Y 2nd	sem	Examination	May					
Offer in 2015 - 2016	Υ		'	·					
Course Grade	A+ to F			A+ to F					
	A Demonstrates thorough and complete mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes; strong critical thinking; excellent ability to apply bioinformatics skills in a range of context.								
Grade Descriptors	A	attaining all the course learning outcomes; strong critical thinking; ex							
Grade Descriptors	В	attaining all the course learning outcomes; strong critical thinking; ex	cellent ability to apply big	oinformatics skills in a					
Grade Descriptors		attaining all the course learning outcomes; strong critical thinking; ex range of context. Demonstrates substantial command of a broad range of knowledge at the course learning outcomes; evidence of critical thinking; good ab	and skills required for attaching to apply bid and skills required for attaching to apply bioinformations skills required for attaining the sk	pinformatics skills in a nining at least most of ses skills in a range of g most of the course					

	Fail	Demonstrates little or no evidence of outcomes; lack of critical thinking; little		equired for attaining the course learning kills in a range of context.			
Course Type	Lecture-b	Lecture-based course					
Course Teaching	Activities		Details	No. of Hours			
& Learning Activities	Lectures			36			
	Tutorials			12			
	Reading / Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments			30			
	Examination			70			
Required/recommended reading and online materials	Proteins, Mount D	Baxevanis AD, Ouellette BFF (2005) Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, 3rd ed. Wiley, Hoboken, N.J. Mount DW (2004) Bioinformatics: Sequence and Genome Analysis, 2nd ed. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.					

BIOC3606 Molecular medi	cine (6 cre	dits)	Academic Yo	ear 2014			
Offering Department	Biochemi	stry	Quota	50			
Course Co-ordinator	Prof D Y	Prof D Y Jin, Biochemistry (dyjin@hku.hk)					
Teachers Involved	Prof D Y Prof M H	Prof K S E Cheah, Biochemistry Prof D Y Jin, Biochemistry Prof M H Sham, Biochemistry Dr. CH Fu, Biochemistry					
Course Objectives	To provide up-to-date knowledge of the molecular and cellular basis of human diseases including cancer and infection with HIV and influenza viruses, thereby preparing the students for a career in biomedical biotechnological, pharmaceutical and genomic research.						
Course Contents & Topics	topics madeath, of pathogen therapy, a	This course covers molecular basis of cancer and viral diseases, and molecular therapeutics. Specific topics may include mouse model of human diseases, cell cycle regulation, cell motility, programmed cell death, oncogenes and tumor suppressor genes, genome instability, HIV science, genetics and pathogenesis of influenza viruses, molecular approaches to vaccine development, stem cells, gene therapy, and nucleic acid therapeutics. Basic knowledge of biochemistry and molecular cell biology is assumed for students taking this course.					
Course Learning Outcomes	On succe	ssful completion of this course, student	s should be able to:				
	 Ilustrate Integra 	 Explain the molecular mechanisms underlying cancers and viral diseases. Ilustrate the application of molecular biology in medicine with examples. Integrate and translate knowledge in molecular biology to new approaches in disease prevention and intervention. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	Pass in BIOC2600 Basic Biochemistry or BIOL2220 Principles of Biochemistry					
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Displays a comprehensive grasp of the key concepts underlying the molecular basis of human diseases, with few omissions or errors. Able to articulate clearly with examples how knowledge in molecular biology can lead to new strategies in disease prevention and intervention. Evidence of strong analytical and critical thinking when dealing with complex scientific data. Some evidence for additional information beyond what is given in the lectures.						
	В	B Displays a substantial and near-complete grasp of the key concepts underlying the molecular basis of human diseases, but without depth in some areas and with some omissions and factual errors. An understanding of the topic though is clear. Able to relate knowledge in molecular biology to new strategies in disease prevention and intervention. Able to apply analytical and critical thinking skills when dealing with scientific data.					
	С	C Displays a general understanding of the key concepts underlying the molecular basis of human disease and is sometimes able to relate knowledge in molecular biology to new strategies in disease prevention and intervention. Sometimes able to apply analytical and critical thinking skills when dealing with scientific data.					
	D	Displays a limited understanding of the key concepts underlying the molecular basis of human disease and is rarely able to relate knowledge in molecular biology to new strategies in disease prevention and intervention. Evidence of weak analytical and critical thinking skills when dealing with scientific data.					
	Fail	Displays an incorrect or incomplete underst disease and is unable to relate this knowled thinking skills when dealing with scientific dat	ge to effective treatment strategies. No evid				
Course Type	Lecture-b	ased course					
Course Teaching	Activities Details		Details	No. of Hours			
& Learning Activities	Lectures			30			
	Tutorials			1:			
		/ Self study		10			

Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Examination		80		
	Test		20		
Required/recommended reading and online materials	Lodish et al: Molecular Cell Biology 7th ed., 2013 (4th ed. is available at NCBI Books) Alberts et al: Molecular Biology of the Cell 4th ed., 2008 (4th ed. is available at NCBI Books)				
Cassimeris et al: Lewin's Cells, 2nd ed., 2011					

BIOC3999 Directed studio	es in bioche	mistry (6 credits)		Academic Year	2014	
Offering Department	Biochemis	try		Quota	36	
Course Co-ordinator	Dr J D Hua	ang, Biochemistry (jdhuang@hku	.hk)			
Teachers Involved		Dr J D Huang, Biochemistry All academic staff, Biochemistry				
Course Objectives		To enhance students knowledge of a particular topic and the students self-directed learning and critical thinking skills.				
Course Contents & Topics	member.	The student undertakes a self-managed study on a topic in biochemistry under the supervision of a stat member. The topic is preferably one not sufficiently covered in the regular curriculum. The directed stud can be a critical review or a synthesis of published work on the subject. A laboratory or field study may also be involved that would enhance the student's understanding of the subject.				
Course Learning Outcomes	On succes	On successful completion of this course, students should be able to:				
	2. Examin	y appraise research literature in a e the theoretical or experimental l questions and evaluate issues fo	pasis for existing concepts	S	biology.	
Pre-requisites (and Co-requisites and Impermissible combination)	including E	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Biochemistry Majincluding BIOC2600 Basic biochemistry and BIOL3401 Molecular biology. This capstone course is for Biochemistry Major students only.				
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Produces a sophisticated and detailed appraisal of the biochemical literature, displaying a comprehensive and deep understanding of the selected topic. Able to contextualize all the ideas within a personal framework of knowledge and evaluate relevant issues emerging from the study. Works proactively with a supervisor to enhance understanding and scientific writing skills. Communicates the findings to a broader audience in an effective way and responds knowledgeably to questions. Excellent time-management skills and able to reflect honestly on one's own learning.				
	В	Produces a coherent appraisal of the biochemical literature, displaying a sound understanding of the selected topic Able to contextualize many of the ideas within a personal framework of knowledge and identify some relevant issues emerging from the study. Works constructively with a supervisor to enhance understanding and scientific writing skills. Clearly communicates the findings to a broader audience and responds knowledgeably to most questions Able to time-manage effectively and reflect on one's own learning.				
	С	Produces a reasonable appraisal of the biochemical literature, displaying an adequate understanding of the selected topic. Able to contextualize a few of the ideas within a personal framework of knowledge and makes some attempt to identify some relevant issues emerging from the study. Works with a supervisor and other co-workers to improve understanding and scientific writing skills. Communicates the findings to a broader audience with reasonable clarity and responds to most questions. Acceptable time-management and self-reflection skills.				
	D	Produces a superficial appraisal of the biochemical literature, displaying a limited understanding of the selected topic. Able to contextualize a few of the ideas within a personal framework of knowledge but unable to identify any relevant issues emerging from the study. Works reluctantly with a supervisor and other co-workers to develop understanding and scientific writing skills. Displays weak communication skills when presenting the findings to a broader audience. Poor time-management and self-reflection skills.				
	Fail	Fail Fails to appraise the biochemical literature and thus unable to display any understanding of the selected topic. Unable to contextualize the ideas within a personal framework of knowledge or identify any relevant issues emerging from the study. Works in isolation, thus failing to make progress in understanding and scientific writing skills. Unable to communicate effectively when presenting the findings to a broader audience. No time-management skills or ability to self-reflect.				
Course Type	Project-ba	sed course				
Course Teaching & Learning Activities	Activities		Details		No. of Hours	
	Reading /	Self study	at least 120 hours	on the project	120	
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%	
	Dissertati	on	including mind ma	p (10%)	60	
	Oral pres	Oral presentation			25	
	Research	report	Supervisor comme	ents	15	
Required/recommended reading and online materials	as sugges	ted by project supervisors	·	'		

Offering Department	Biochemis	stry		Quota	50	
Course Co-ordinator	Dr K M Ya	ao, Biochemistry (kmyao@hku	ı.hk)			
Teachers Involved	Dr D Chai Dr CH Fu Prof D K	Dr D Chan, Biochemistry Dr CH Fu, Biochemistry Prof D K Y Shum, Biochemistry Dr K M Yao, Biochemistry				
Course Objectives	multicellul	se aims at providing students lar organisms. This course is p career in biomedical sciences	particularly useful for studer			
Course Contents & Topics	Cell-surfa mechanis kinases, t	nd intracellular signal transduc ce receptors and signal tra m; signaling pathways that on the Ras/MAP kinase pathway, ate Smads	nsduction proteins; G-Procontrol gene expression: re	eceptors that activate	protein tyrosine	
	The micro	eleton as target of signal trans otubule cytoskeleton; kinesin a cytoskeletion and cell behavio	and dynein motor; the actin		the intermediate	
	Transloca	n trafficking and sorting pathwa tion of secretory proteins - on, folding and quality control essing	insertion into the ER; ma			
	Cell-cell a	D. Cell-cell and cell-matrix adhesion Cell-cell and cell-extracellular matrix (ECM) junctions and their adhesion molecules; cadherins and integrins; collagens and proteoglycans; when cell meets the matrix; regulation of signaling molecules by				
Course Learning Outcomes	On succes	ssful completion of this course	e, students should be able to	D:		
		Describe the molecular and cellular signal transduction mechanisms that mediate cellular communication to achieve a plethora of cellular responses.				
	cytoskelet	2. Illustrate the controls of the metabolic and cellular regulation based on their understanding of cytoskeleton as target of signal transduction, protein trafficking and sorting pathways, and cell-cell and cell matrix adhesion.				
	3. Develo	3. Develop critical thinking and analytical skills.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in technolog	Pass in BIOC3601 Metabolism or BIOL3401 Molecular biology or BIOL3402 Cell biology and ce technology or BIOL3404 Protein structure and function				
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough and complete mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong critical thinking and analytical skills, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations.				
	В					
	С					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some critical thinking, but with limited analytical skills. Show limited ability to apply knowledge to solve problems.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of critical thinking and analytical skills. Show very little or no ability to apply knowledge to solve problems.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	D !!	Reading / Self study			100	
	Reading					
		3	Details		eighting in final ourse grade (%)	
			Details			
Assessment Methods and Weighting	Methods	ents	Details		ourse grade (%	

BIOC4611 Advanced biocl		-			-	
Offering Department	Biochemi	istry		Quota	50	
Course Co-ordinator	Dr D Cha	n, Biochemistry (chand@hk	ku.hk)			
Teachers Involved	Dr M Kota Dr C M Q Dr J Tanr	Dr D Chan, Biochemistry Dr M Kotaka, Physiology Dr C M Qian, Biochemistry Dr J Tanner, Biochemistry Dr N S Wong, Biochemistry				
Course Objectives	sequence	This course is aim at providing students with an up-to-date knowledge of protein biochemistry from sequence to structure and disease; realizing the importance of kinetics in cellular function and an appreciation of the technological advances in the characterization of macromolecules.				
Course Contents & Topics	conforma biomolec magnetic	Topics including protein folding and misfolding in diseases; conformation of proteins and the role of conformational changes in protein function; catalytic mechanisms of enzymes and enzyme kinetics; biomolecular interactions; characterization of macromolecules using X-ray crystallography, nuclear magnetic resonance and other spectroscopy methods; protein engineering and therapeutic approaches targeting protein function.				
Course Learning Outcomes	On succe	On successful completion of this course, students should be able to:				
Pre-requisites	2. Recogn 3. Derive 4. Apply and appli	Describe how protein structures inform functions. Recognize the roles of enzyme kinetics in cellular functions. Derive structural information of macromolecules from experimental data. Apply their knowledge on protein engineering and therapeutics, and on experimental designs in bas and applied research. Pass in BIOC3601 Metabolism; and BIOL3404 Protein Structure and Function or CHEM2441 Organ				
(and Co-requisites and Impermissible combination)		Chemistry I; and Pass in BIOC4610 Advanced Biochemistry I, or already enrolled in this course				
Offer in 2014 - 2015	N	N Examination				
Offer in 2015 - 2016	N	N				
Course Grade	A+ to F					
Grade Descriptors	Α	Clear and insightful description of how protein structure informs function; clear evidence of ability to recognize mechanisms of enzyme function and interpretation of data; effectual demonstration of applying knowledge to the design of scientific methodologies and cohesive, systematic and creative organization of information for presentation and communication.				
	В	Clear description of how protein structure informs function; evidence of ability to recognize mechanisms of enzyme function and interpretation of data; capable demonstration of applying knowledge to the design of scientific methodologies; and cohesive and systematic organization of information for presentation and communication.				
	С	Awareness of how protein structure informs function; some evidence of ability to recognize mechanisms of enzyme function and interpretation of data; some capable demonstration of applying knowledge to the design of scientific methodologies and systematic organization of information for presentation and communication.				
	D	Superficial awareness of how protein structure informs function; limited evidence of ability to recognize mechanisms of enzyme function and interpretation of data; superficial demonstration of applying knowledge to the design of scientific methodologies and limited organizational skill of information for presentation and communication.				
	Fail	Fail Lack of awareness of how protein structure informs function; lack of ability to recognize mechanisms of enzyme function and interpretation of data; superficial demonstration of applying knowledge to the design of scientific methodologies; insufficient organizational skill of information for presentation and communication.				
Course Type	Lecture-b	pased course				
Course Teaching	Activitie	 9\$	Details		No. of Hours	
& Learning Activities	Lectures	-			36	
	Tutorials				12	
		/ Self study			100	
Assessment Methods and Weighting	Methods	,	Details		eighting in final	
	Assignm	nents			30	
	Examina				70	
Required/recommended reading	Fersht A		anism in Protein Science: A	Guide to Enzyme Cata		

BIOC4612 Molecular bi	BIOC4612 Molecular biology of the gene (6 credits)				
Offering Department	Biochemistry	Quota	50		
Course Co-ordinator	Prof K S E Cheah, Biochemistry (hrmbdkc@hku.hk)				
Teachers Involved	Prof K S E Cheah, Biochemistry Prof M H Sham, Biochemistry Dr K M Yao, Biochemistry Dr Z J Zhou, Biochemistry				
Course Objectives	To provide an up-to-date knowledge of molecular biology, eukaryotic gene expression, molecular embryology.	especially with respect to	the regulation o		

Course Contents & Topics	This is a comprehensive course covering many detailed molecular aspects of gene regulation and gene function. Through this course an understanding of how gene expression can be regulated at levels of transcription and post transcription will be gained.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe the mechanisms for regulation of transcription, RNA processing and translation in eukaryotes. 2. Explain how cellular homeostasis can be maintained by a combination of controls of gene expression a multiple levels. 3. Illustrate the hierarchy of gene expression regulation in multicellular developmental processes. 4. Interpret experimental results in gene regulation studies.					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in BIOC3601 Metabolism or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell technology or BIOL3404 Protein structure and function				
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Y					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrates a deep and comprehensive understanding of the regulation of eukaryotic gene expression and its relevance to disease and effectively relates the knowledge to multicellular developmental processes. Uses skill and insight to analyse and interpret experimental data from gene regulation studies.				
	В	B Demonstrates a competent grasp of the key concepts in the regulation of eukaryotic gene expression and its relevance to disease and is able to link the knowledge to multicellular developmental processes. Correctly analyses and interprets experimental data from gene regulation studies.				
	С	Demonstrates a basic understanding of the regulation of eukaryotic gene expression and its relevance to disease and is sometimes able to relate the knowledge to multicellular developmental processes. Displays a limited capacity to analyse and interpret experimental data from gene regulation studies.				
	D	Demonstrates a simplistic knowledge of the regulation of eukaryotic gene expression and rarely relates the information to multicellular developmental processes. Displays weak analytical skills and is rarely able to interpret experimental data from gene regulation studies.				
	Fail Demonstrates incomplete or incorrect knowledge of the regulation of gene expression and is unable to relate the ideas to multicellular developmental processes. Unable to analyse or interpret experimental data from gene regulation studies.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents			20	
	Examinat	ion			80	
Required/recommended reading and online materials	Lewin B (2	et al. (2007) Molecular Biology of the C 2008) Genes IX. Jones and Bartlett Pub D et al. (2008) Molecular Biology of	olishers, Sudbury, Ma	ass.		

BIOC4613 Advanced technocredits)	IOC4613 Advanced techniques in biochemistry & molecular biology (6 redits)					
Offering Department	Biochemistry	Quota	50			
Course Co-ordinator	Dr D Chan, Biochemistry (chand@hku.hk)					
Teachers Involved	Dr D Chan & Dr J Tanner, Biochemistry Prof D Y Jin & Dr B C W Wong, Biochemistry Dr J D Huang, Biochemistry Dr K M Yao, Biochemistry Dr V Lui, Surgery					
Course Objectives	This is an advanced experimental-based course for students majoring in Biochemistry and related disciplines. The aim is to provide the necessary training for students to pursuit postgraduate research education and potential employment in a scientific laboratory/industry environment.					
Course Contents & Topics	Hands-on experiments using advanced techniques in biochemistry, molecular and cell biology, and bioinformatics. Students will also have the opportunity to familiarize themselves with modern instrument used in life sciences.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the basic principles of current advanced techniques commonly used in biochemistry and molecular biology. 2. Apply and perform these techniques in other novel experimental settings. 3. Critically evaluate experimental data. 4. Design alternative approaches to test or validate hypotheses. 5. Write a concise experimental report using correct terminologies and nomenclatures.					
Pre-requisites and Pass in BIOC3604 Essential techniques in biochemistry and molecular biology						

Impermissible combination)						
Offer in 2014 - 2015	Y 1s	t sem	Examinatio	n Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Comprehensive and in-depth understanding of the principles and applications of advance technologies in biochemistry; clear and effective ability to identify problems and generate solutions relating to applications in a laboratory setting; clear evidence of ability to evaluate experimental data; cohesive and systematic planning and organization of experimental design and presentation of experimental data.				
	В	Comprehensive understanding of the principles and applications of advance technologies in biochemistry; clear ability to identify problems and generate solutions relating to applications in a laboratory setting; evidence of ability to evaluate experimental data; systematic planning and organization of experimental design and presentation of experimental data.				
	С	Sound understanding of the principles and applications of advance technologies in biochemistry; sound ability to identify problems and generate solutions relating to applications in a laboratory setting; some evidence of ability to evaluate experimental data; satisfactory planning and organization of experimental design and presentation of experimental data.				
	D	Superficial understanding of the principles and applications of advance technologies in biochemistry; limited ability to identify problems and generate solutions relating to applications in a laboratory setting; some awareness of ability to evaluate experimental data; some evidence of planning and organization of experimental design and presentation of experimental data.				
	Fail Lack of understanding of the principles and applications of advance technologies in biochemistry; lack of ability to identify problems and generate solutions relating to applications in a laboratory setting; lack of evidence of ability to evaluate experimental data; insufficient evidence of planning and organization of experimental design and presentation of experimental data.					
Course Type	Lecture v	vith laboratory component course				
Course Teaching	Activitie	9 \$	Details	No. of Hours		
& Learning Activities	Lectures	3		12		
	Laboratory			54		
	Tutorials	3		6		
	Reading / Self study			76		
Assessment Methods and Weighting	Method	S	Details	Weighting in final course grade (%)		
	Assignm	ents		50		
	Examina	ation	One 3-hour written examination	50		
Required/recommended reading and online materials		, Walker JM (2005) Principles and y Press, Cambridge.	Techniques of Biochemistry and Molec	ular Biology. Cambridge		

BIOC4966 Biochemistry in	nternship	(6 credits) Acc	ademic Year	2014		
Offering Department	Biochemis	try	ıota	20		
Course Co-ordinator	Dr J D Hua	ang, Biochemistry (jdhuang@hku.hk)		'		
Teachers Involved		ang, Biochemistry nic staff, Biochemistry				
Course Objectives	major of st	This course aims to offer students the opportunities to gain work experience in the industry related to the major of study. The workplace learning experience would be of great benefit to the students to apply the knowledge gained in the study to the real work environments. Students have to take on at least 160 hour of internship work either within the University or outside the University arranged by the School/Departments				
Course Contents & Topics	or various 2. Outside student wil	 Within the university: The student will be supervised by a staff member (Supervisor), working on a project or various tasks as instructed by the Supervisor. Outside the university: The student will work in an external agency related to the major of study. The student will be supervised under a staff member of the external agency (the External Supervisor) and a staff member of the Department/School of the student (the Internal Supervisor). 				
Course Learning Outcomes	1. Recogni 2. Examine	sful completion of this course, students should be able to: ze the strengths and limitations of their area of training or expertise the role of science in our society. problem-solving skills to solve novel and ill-defined problems.	е.			
Pre-requisites (and Co-requisites and Impermissible combination)	including E Students a	least 24 credits of advanced level (level 3 or 4) compulsory/core IOC3604 Essential techniques in biochemistry & molecular biology re expected to have satisfactorily completed their Year 3 study. one course is for Biochemistry Major students only.		chemistry Majo		
Offer in 2014 - 2015	N	Exa	amination			
Offer in 2015 - 2016	Υ	'				
Course Grade	Pass/Fail					
Grade Descriptors	Pass	Able to apply knowledge to solve problems in the workplace. Successfully handle the job or assigned by supervisor(s). Establishes effective collaboration are colleagues, and clients in the job. Successfully fulfills the requirements set ou working hours, written and oral report, and evaluation by supervisor(s), et	nd communication value in the Course De	with supervisor(s) scription regarding		

		performance in the above would be awarded a grade of "Distinction". Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the job assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s), othe colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding working hours, written and oral report, or evaluation by supervisor(s), etc.				
	Fail					
Course Type	Internshi	ıship				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Internship work		it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)	160		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Written report		written report, employer's feedback and oral presentation	100		
Additional Course Information	Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given those who have completed Year 2. Satisfactory completion of this course can be counted towards the Capstone requirement. Details internship will be recorded on the student's transcript. This course will be assessed on "Pass, Fail ar Distinction" basis. Students who are interested to enrol in this course should contact the Department obtain the approval. Enrolment of this course is not conducted via the online course selection system and should be mad through the relevant Department/School office after approval has been obtained from the course coordinator.					

BIOC4999 Biochemistry p	roject (12 c	redits)	Academic Year	2014		
Offering Department	Biochemist	try	Quota	25		
Course Co-ordinator	Dr N S Wo	ng, Biochemistry (nswong@hku.hk)				
Teachers Involved		Dr N S Wong, Biochemistry All academic staff, Biochemistry				
Course Objectives	communica	To enable students to acquire the basic skills in scientific research: literature search, critical reasoning, communication (both orally and in writing), teamwork and time management. The course is particularly useful for those students who intend to pursue a career in life science.				
Course Contents & Topics	Experimen Critical app Formulatio Design of e Data analy	Project-related topics in biochemistry, cell and molecular biology. Experimental methods in protein and nucleic acid biochemistry; bioinformatics and cell biology. Critical appraisal of current science literature Formulation of research questions Design of experiments. Data analysis and interpretation. Scientific writing				
Course Learning Outcomes	On succes	sful completion of this course, students should be able to:				
	 Formula Apply ap Manage 	 Describe recent research development in a defined area of biochemistry and molecular biology. Formulate research questions and design experiments to address these questions. Apply appropriate experimental techniques to solve research problems. Manage and interpret experimental results. Develop scientific writing skills and logically report their research findings. 				
Pre-requisites (and Co-requisites and Impermissible combination)	including 4 BIOC3604 biochemist in these tw	least 24 credits of advanced level (level 3 or 4) compulsor of the following 5 courses: BIOL3401 Molecular Biolog Essential techniques in biochemistry and molecular and BIOC4613 Advanced techniques in biochemistry to courses.	gy, BIOC3601 Basic I biology; and BIOC	Metabolism, and 1610 Advanced		
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Plans and executes a sophisticated and imaginative experimental investigation, framing the research question within existing knowledge. Displays tenacity and commitment, generating a meaningful body of data that is analysed with insight and comprehensively evaluated in the context of the original research question. Works proactively with a supervisor and other co-workers to enhance practical and scientific writing skills. Communicates the findings to a broader audience in an effective way and responds knowledgeably to questions. Excellent time-management skills.					
	Plans and executes a detailed experimental investigation, framing the research question within existing knowledge. Works with commitment, generating a sufficient body of data that is analysed and evaluated in the context of the original research question with skill and understanding. Works constructively with a supervisor and other co-workers to enhance practical and scientific writing skills. Clearly communicates the findings to a broader audience and responds knowledgeably to most questions. Able to time-manage effectively.					
		responds knowledgeably to most questions. Able to time-manage ene	Clivery.			
	С	Plans and executes an experimental investigation, attempting to co adequate commitment in order to generate sufficient data for a reaso the original research question. Works with a supervisor and other writing skills. Communicates the findings to a broader audience w questions. Acceptable time-management skills.	ntextualize the research quanties analysis and evaluat co-workers to improve pra	ion in the context of ctical and scientific		

		skills.				
	Fail	Plans and executes a flawed or simplistic experimental investigation, which lacks a valid scientific context. St commitment when collecting data and produces an incoherent analysis and evaluation. Works in isolatic failing to improve practical and scientific writing skills. Displays weak communication skills when present findings to a broader audience. No time-management skills.				
Course Type	Project-ba	sed course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Reading / Self study			240		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Dissertation			60		
	Oral presentation		including continuous assessment (15%)	40		
Required/recommended reading and online materials	None pres	cribed				

BIOL3404 Protein structur	e and fun	ction (6 credits)		Academic Year	2014
Offering Department	Biochemi	stry		Quota	160
Course Co-ordinator	Dr C M C	tian, Biochemistry (cmqian@hku.hk	s)		
Teachers Involved	Prof W W	ip, Biological Sciences / M Lee, Biological Sciences kian, Biochemistry			
Course Objectives	the meth	le students with a good understand lods for study of both. This coul stry and biotechnology.			
Course Contents & Topics	higher structure Structure Enzymole Protein	se will include: Elements of structur ructures; Methods for determination ifugation and several hydrodynam and function: molecular motifs, re- ogy: kinetics and energetics of bin purification and characterization: ations of molecular masses and we	n of structure: X-ray cryst nic methods for determin cognition and binding, evo ding, transition state and various liquid chromat	allography, various ation of molecular blution, natural and molecular mechan ographical method	optical methods, size and shape; artificial mutants; isms of catalysis; ds, methods of
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate a basic understanding of the relationship between protein structure and function. 2. Design assaying methods for enzymes. 3. Find out kinetic parameters of proteins or enzymes by graphically techniques. 4. Learn about the ways to purify protein and the many industrial uses of proteins.				unction.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E	BIOC2600 Basic biochemistry or BIO	DL2220 Principles of bioch	nemistry	
Offer in 2014 - 2015	Y 2n	d sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Exceptionally good performance de insight into the scientific literature. 3. Su			ect matter. 2. Critical
	B 1. Good performance demonstrating full understanding of the subject matter. 2. Coherent insight into the scientific literature. 3. Good writing and group collaboration skills.				
	Satisfactory performance demonstrating adequate understanding of the subject matter. 2. Some insight into the scientific literature. 3. Adequate writing and group collaboration skills.				
	D 1. Limited performance demonstrating some understanding of basic subject matter. 2. Some ability to use the scientific literature. 3. Limited writing and group collaboration skills.				
	Fail	Poor understanding of subject matter collaborate.	r. 2. Little to no insight into use of	of the scientific literature.	3. Unable to write or
Course Type	Lecture-b	pased course			
Course Teaching & Learning Activities	Activitie	es	Details		No. of Hours
a Learning Activities	Lectures	3			36
	Tutorials	3			12
	Reading	/ Self study			100
Assessment Methods and Weighting	Method	s	Details		Veighting in final course grade (%)
	Assignm	nents			30

	I I
Required/recommended reading and online materials	None prescribed To be announced.
Additional Course Information	This course will be offered subject to a minimum enrollment number and availability of teachers.

BIOL1110 From molecu	ules to cells	s (6 credits)		Academic Year	2014
Offering Department	Biological	Sciences		Quota	169
Course Co-ordinator	Prof B K C	Chow, Biological Sciences (bkcc@l	hku.hk)		
Teachers Involved	Dr C S C L Dr K W Y Y	Chow, Biological Sciences o, Biological Sciences Yuen, Biological Sciences ang, Biological Sciences			
Course Objectives	later studie	e aims to provide basic conceptual es in applied biology, genetics, bioch and developmental biology.			
Course Contents & Topics	cells and to is divided in Genes and are the rull but not ide Metabolism requiremer Cells and themselves cycle contributed in Genetic en	pased approach will be adopted to be inspire further investigation throught of a parts and the following is a list of inheritance: How do children resences of genetic inheritance? What definitical to, their parents? What happer and Health: How are diets relatives? Why can't we live without plants cell division: What are the commons to form tissues and organs? What old system goes wrong? How newly figineering and modern biology: To we since genetically modified food safe for insportant?	h the exploration of conte of some of the questions nble their parents? What termines gender and sexin if some genes are non-fited to good health? Do s? In features in a cell? How the is a cell cycle and how formed cells commit thems that extent can genes be re-	mporary biological is to be asked and disc is the central dogma uality? Why is that cunctional or mutated all humans have to do cells communicati it is regulated? Whele selves for differentiat modified? Is gene the	ssues. The course cussed: of biology? What shildren resemble, ? the same dietary ate and assemble that happens if cell tion? erapy the future of
Course Learning Outcomes	1. Underst living organ 2. Learn th 3. Underst 4. Describ developme	e underlying principle on how mutati and the importance of dietary intake e various stages in a cell division ent.	es in a genome and the ion of a gene can lead to to form of biomolecules in relation and that disturbance of	he development of a	genetic disease.
		e concepts used in genetic engineeri ome applications of genetic engineer		roduction of genetica	ally modified food.
(and Co-requisites and Impermissible				roduction of genetica	ally modified food.
(and Co-requisites and Impermissible combination)	6. Know so			roduction of geneticates represented the second sec	ally modified food. Dec May
(and Co-requisites and impermissible combination) Offer in 2014 - 2015	6. Know so	ome applications of genetic engineer			
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	6. Know so	ome applications of genetic engineer			
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	6. Know so NIL Y 1st s	ome applications of genetic engineer	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situati	Examination ge required for attaining a with evidence of original ons. Apply highly effective	Dec May all the course learning thought, and ability to e organizational skills.
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	6. Know so NIL Y 1st s Y A+ to F	pme applications of genetic engineer sem 2nd sem Demonstrate thorough mastery at an adva outcomes. Show strong analytical and criticapply knowledge to a wide range of comple	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situati 1, thoughtful intellectual engager proad range of knowledge requipical and critical abilities and log Apply effective organizationals	Examination ge required for attaining a with evidence of original ons. Apply highly effective nent with broad range of rired for attaining at leas gical thinking, and ability it	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. It most of the course to apply knowledge to
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	6. Know so NIL Y 1st s Y A+ to F	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and criti apply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations.	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager oroad range of knowledge requivical and critical abilities and log Apply effective organizational shad range of relevant concepts. narand of knowledge required for a cical abilities and logical thinking, nizational skills. Writings mostly	Examination ge required for attaining a with evidence of original ons. Apply highly effective the with broad range of rired for attaining at leas gical thinking, and ability the skills. Writings mostly detail the courand ability to apply know indicate informed, intellections and ability to apply know indicate informed, intellections.	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. t most of the course to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	6. Know so NIL Y 1st s Y A+ to F A B	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critical apply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with broughtman processing the properties of some analytical and critical situations. Apply moderately effective organistications. Apply moderately effective organistications.	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager or and critical abilities and logical thinking, but with a concepts. In and or fitical abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana apply limited or barely effective	ge required for attaining a with evidence of original ons. Apply highly effective men with evidence of a dailing a dailing and a bility is skills. Writings mostly de attaining most of the cours and ability to apply know indicate informed, intellectanding. In a dailing some of the cours and a dailing some of the cour	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. It most of the course to apply knowledge to emonstrate informed, se learning outcomes. ledge to most familiar tual engagement with e learning outcomess. Show limited ability
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	6. Know so NIL Y 1st s Y A+ to F A B	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed bearing outcomes. Show evidence of anal familiar and some unfamiliar situations. thoughtful intellectual engagement with bro Demonstrate general but incomplete common Show evidence of some analytical and critisituations. Apply moderately effective organ concepts or theories but not always with surpose of some coherent and logito apply knowledge to solve problems. A	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager or and range of knowledge requival and critical abilities and logical thinking, and range of relevant concepts. The analysis of knowledge required for a call abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attacal thinking, but with limited analyply limited or barely effective neories but mostly at a superficient and of knowledge required for a coherent thinking. Show very limally effective or ineffective or ineffective.	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In the course in the course in the course organizational skills. With the course in the cours	Dec May all the course learning thought, and ability to a organizational skills. relevant concepts. It most of the course to apply knowledge to apply knowledge to apply knowledge to apply knowledge to most familiar ctual engagement with a learning outcomes. Show limited ability rittings indicate some ng outcomes. Lack of y knowledge to solve
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	6. Know so NIL Y 1st s Y A+ to F A B C D	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critical apply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with bro Demonstrate general but incomplete common Show evidence of some analytical and critical situations. Apply moderately effective orgation concepts or theories but not always with submonstrate partial but limited command Show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate little or no evidence of common analytical and critical abilities, logical and problems. Organizational skills are mini	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager or and range of knowledge requival and critical abilities and logical thinking, and range of relevant concepts. The analysis of knowledge required for a call abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited analyply limited or barely effective neories but mostly at a superficient and of knowledge required for a coherent thinking. Show very limally effective or ineffective or ineffective.	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In the course in the course in the course organizational skills. With the course in the cours	Dec May all the course learning thought, and ability to a organizational skills. relevant concepts. It most of the course to apply knowledge to apply knowledge to apply knowledge to apply knowledge to most familiar ctual engagement with a learning outcomes. Show limited ability rittings indicate some ng outcomes. Lack of y knowledge to solve
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	6. Know so NIL Y 1st s Y A+ to F A B C D	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with brong beautiful intellectual engagement with substantial command. Demonstrate pental but incomplete command show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate partial but limited command Show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate particular bilities, logical and problems. Organizational skills are miningagement with concepts or theories. Writself course	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager or and range of knowledge requival and critical abilities and logical thinking, and range of relevant concepts. The analysis of knowledge required for a call abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited analyply limited or barely effective neories but mostly at a superficient and of knowledge required for a coherent thinking. Show very limally effective or ineffective or ineffective.	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In the course in the course in the course organizational skills. With the course in the cours	Dec May all the course learning thought, and ability to a organizational skills. relevant concepts. It most of the course to apply knowledge to apply knowledge to apply knowledge to apply knowledge to most familiar ctual engagement with a learning outcomes. Show limited ability rittings indicate some ng outcomes. Lack of y knowledge to solve
Course Type Course Teaching	6. Know so NIL Y 1st s Y A+ to F A B C D Fail	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with brong beautiful intellectual engagement with substantial command. Demonstrate pental but incomplete command show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate partial but limited command Show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate particular bilities, logical and problems. Organizational skills are miningagement with concepts or theories. Writself course	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager oroad range of knowledge requivical and critical abilities and logical thinking, and range of relevant concepts. In a concepts and range of relevant concepts and range of knowledge required for a cical abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana capply limited or barely effective neories but mostly at a superficie and for knowledge required for a coherent thinking. Show very limitings are irrelevant or superficial trings are irrelevant or superficial	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In a critical abilities organizational skills. With level. Ittaining the course learnifittle or no ability to apply Writings reveal an abs	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. It most of the course to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar stual engagement with e learning outcomes. Show limited ability ritings indicate some ang outcomes. Lack of y knowledge to solve sence of intellectual
Course Type Course Teaching	6. Know so NIL Y 1st s Y A+ to F A B C D Fail Lecture-ba Activities	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with brong beautiful intellectual engagement with substantial command. Demonstrate pental but incomplete command show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate partial but limited command Show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate particular bilities, logical and problems. Organizational skills are miningagement with concepts or theories. Writself course	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager oroad range of knowledge requivical and critical abilities and logical thinking, and range of relevant concepts. In a concepts and range of relevant concepts and range of knowledge required for a cical abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana capply limited or barely effective neories but mostly at a superficie and for knowledge required for a coherent thinking. Show very limitings are irrelevant or superficial trings are irrelevant or superficial	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In a critical abilities organizational skills. With level. Ittaining the course learnifittle or no ability to apply Writings reveal an abs	Dec May all the course learning thought, and ability to e organizational skills. elevant concepts. It most of the course to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar stual engagement with e learning outcomes. Show limited ability ritings indicate some ing outcomes. Lack of y knowledge to solve sence of intellectual
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	6. Know so NIL Y 1st s Y A+ to F A B C D Fail Lecture-ba Activities Lectures Tutorials	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with brong beautiful intellectual engagement with substantial command. Demonstrate pental but incomplete command show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate partial but limited command Show evidence of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate particular bilities, logical and problems. Organizational skills are miningagement with concepts or theories. Writself course	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager oroad range of knowledge requivical and critical abilities and logical thinking, and range of relevant concepts. In a concepts and range of relevant concepts and range of knowledge required for a cical abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana capply limited or barely effective neories but mostly at a superficie and for knowledge required for a coherent thinking. Show very limitings are irrelevant or superficial trings are irrelevant or superficial	ge required for attaining a with evidence of original ons. Apply highly effective the ment with broad range of ried for attaining at least gical thinking, and ability is skills. Writings mostly deattaining most of the cours and ability to apply know indicate informed, intellectanding. In a critical abilities organizational skills. With level. Ittaining the course learnifittle or no ability to apply Writings reveal an abs	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar stual engagement with e learning outcomes. Show limited ability ritings indicate some ing outcomes. Lack of y knowledge to solve sence of intellectual No. of Hours 36
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	6. Know so NIL Y 1st s Y A+ to F A B C D Fail Lecture-ba Activities Lectures Tutorials	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critiapply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with substance of some analytical and critistituations. Apply moderately effective orgate concepts or theories but not always with substance of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate little or no evidence of commanalytical and critical abilities, logical and problems. Organizational skills are miniengagement with concepts or theories. Writself.	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager oroad range of knowledge requivical and critical abilities and logical thinking, and range of relevant concepts. In a concepts and range of relevant concepts and range of knowledge required for a cical abilities and logical thinking, nizational skills. Writings mostly ufficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana capply limited or barely effective neories but mostly at a superficie and for knowledge required for a coherent thinking. Show very limitings are irrelevant or superficial trings are irrelevant or superficial	ge required for attaining a with evidence of original ons. Apply highly effective men. Apply highly effective men with broad range of rired for attaining at leas agical thinking, and ability to apply know indicate informed, intellectanding. In a special property of the cours and ability to apply know indicate informed, intellectanding. In a special property of the cours and apply the course organizational skills. We all level. It a special property of the course learning the cou	Dec May all the course learning thought, and ability to e organizational skills. relevant concepts. It most of the course to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar stual engagement with e learning outcomes. Show limited ability ritings indicate some ang outcomes. Lack of y knowledge to solve sence of intellectual No. of Hours 36
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities	6. Know so NIL Y 1st s Y A+ to F A B C D Fail Lecture-ba Activities Lectures Tutorials Reading /	Demonstrate thorough mastery at an adva outcomes. Show strong analytical and critia apply knowledge to a wide range of comple Writings consistently demonstrate informed. Demonstrate substantial command of a blearning outcomes. Show evidence of anal familiar and some unfamiliar situations, thoughtful intellectual engagement with brong beautiful intellectual engagement with substance of some analytical and critistiuations. Apply moderately effective orgate concepts or theories but not always with substance of some coherent and logito apply knowledge to solve problems. A intellectual engagement with concepts or the Demonstrate little or no evidence of commanalytical and critical abilities, logical and problems. Organizational skills are miniengagement with concepts or theories. Writself study	nced level of extensive knowled cal abilities and logical thinking, ex, familiar and unfamiliar situatid, thoughtful intellectual engager or and a critical abilities and logical thinking, exad range of knowledge required for a cal abilities and logical thinking, nizational skills. Writings mostly afficient depth, breadth or unders of knowledge required for attactal thinking, but with limited ana apply limited or barely effective neories but mostly at a superficial and of knowledge required for a coherent thinking. Show very limitally effective or ineffective, itings are irrelevant or superficial	ge required for attaining a with evidence of original ons. Apply highly effective men. Apply highly effective men with broad range of rired for attaining at leas agical thinking, and ability to apply know indicate informed, intellectanding. In a special property of the cours and ability to apply know indicate informed, intellectanding. In a special property of the cours and apply the course organizational skills. We all level. It a special property of the course learning the cou	Dec May all the course learning thought, and ability to a organizational skills. relevant concepts. to apply knowledge to apply knowledge to emonstrate informed, see learning outcomes. ledge to most familiar tual engagement with e learning outcomes. So show limited ability ritings indicate some ng outcomes. Lack of y knowledge to solve sence of intellectual No. of Hours 36 12 100 Veighting in final

Offering Department	Biological S	Sciences		Quota	80
Course Co-ordinator		nyk, Biological Sciences (dvornyk@i	hku.hk)		
Teachers Involved		nyk, Biological Sciences	,		
Course Objectives	To introduc	ce students to the diversity and func- l environment, disease and public h			
Course Contents & Topics	genetics; I animals a	Evolutionary diversity of bacteria, archaea, eukarya and viruses; Metabolic strategies, cell biology an genetics; Microbial ecology, marine microbiology, terrestrial microbiology; Microbial interactions wit animals and plants; The human microbiome; Medical microbiology and immunology; Biotechnolog applications; Food spoilage and food fermentations.			interactions with
Course Learning Outcomes	On succes	sful completion of this course, stude	ents should be able to:		
	2. Explain and compa3. Identify	Describe the key features of the major microbial phyla and place them in an evolutionary context. Explain the major physiological and genetic processes in prokaryotes and eukaryotic microorganism and compare the similarities and differences between these two domains. Identify the microorganisms involved and their role in ecological processes, human disease and medicine, food production and spoilage, and biotechnology.			
Pre-requisites (and Co-requisites and Impermissible combination)	NIL				
Offer in 2014 - 2015	Y 1st s	sem		Examination	Dec
Offer in 2015 - 2016	Υ				<u>'</u>
Course Grade	A+ to F				
Grade Descriptors	A (85-100%) Meets the standard of excellence. All criteria are addressed. Organization of ideas and clarity are excellent. Additional reading or research is evident. Ideas show an exceptional understanding of concepts. Arguments are highly persuasive and show excellent judgment and prioritization of issues. Presentation is highly creative and appealing.				
	В	(70-84%) Approaches the standard of excellence. All criteria are addressed. Organization of ideas and clarity are very good. Ideas show a complete understanding of concepts. Arguments are persuasive and prioritize major issues. Presentation is creative and appealing.			
	С	(55-69%) Meets an acceptable standard. All criteria are addressed. Organization of ideas and clarity are sufficient. Ideas show an effective understanding of concepts. Arguments identify major issues. Presentation is appealing but may lack clarity.			
	_	(45-54%) Below acceptable standard. Most criteria are addressed. Organization of ideas and clarity are weak. Ideas show an incomplete understanding of concepts. Arguments are not persuasive. Presentation lacks creativity or is not appealing.			
	D	show an incomplete understanding of con-			
	Fail	show an incomplete understanding of con-	cepts. Arguments are not pe major criteria. Very weak o	rsuasive. Presentation la	acks creativity or is not clarity. Ideas show a
Course Type	Fail	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify	cepts. Arguments are not pe major criteria. Very weak o	rsuasive. Presentation la	acks creativity or is not clarity. Ideas show a
Course Teaching	Fail	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course	cepts. Arguments are not pe major criteria. Very weak o	rsuasive. Presentation la	acks creativity or is not clarity. Ideas show a
Course Teaching	Fail Lecture wit	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation	rsuasive. Presentation la	cks creativity or is not clarity. Ideas show a appealing.
Course Teaching	Fail Lecture wit	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation	rsuasive. Presentation la	clarity. Ideas show a appealing. No. of Hours
Course Teaching	Fail Lecture wit Activities Lectures	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation	rsuasive. Presentation la	clarity. Ideas show a appealing. No. of Hours
Course Teaching	Fail Lecture with Activities Lectures Laborator Tutorials	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation	rsuasive. Presentation la	clarity. Ideas show a appealing. No. of Hours 24
Course Teaching & Learning Activities Assessment Methods	Fail Lecture with Activities Lectures Laborator Tutorials	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh th laboratory component course	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation	rsuasive. Presentation la rganization of ideas and lacks creativity or is un	clarity. Ideas show a appealing. No. of Hours 24 24
Course Teaching & Learning Activities Assessment Methods	Fail Lecture with Activities Lectures Laborator Tutorials Reading /	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh- th laboratory component course Self study	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation Details	rsuasive. Presentation la rganization of ideas and lacks creativity or is un	clarity. Ideas show a appealing. No. of Hours 24 24 6 100 Weighting in final
Course Teaching & Learning Activities Assessment Methods	Fail Lecture with Activities Lectures Laborator Tutorials Reading / Methods	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh th laboratory component course Self study	cepts. Arguments are not pe major criteria. Very weak or erent argument. Presentation Details	rsuasive. Presentation la rganization of ideas and lacks creativity or is un	No. of Hours No. of Hours 24 24 6 100 Weighting in final course grade (%)
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading and online materials	Fail Lecture with Activities Lectures Laborator Tutorials Reading / Methods Examinati Laborator	show an incomplete understanding of con- appealing. (<45%) Unacceptable. Inability to identify lack of understanding of concepts. No coh th laboratory component course Self study on y reports ogy of Microorganisms, Pearson I	major criteria. Very weak or erent argument. Presentation Details Details	rganization of ideas and lacks creativity or is un	No. of Hours No. of Hours 24 24 6 100 Weighting in final course grade (%)

BIOL1201 Introduction	to food and nutrition (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	110
Course Co-ordinator	Prof N P Shah, Biological Sciences (npshah@hku.hk)		
Teachers Involved	Dr E T S Li, Biological Sciences Dr J W F Wan, Biological Sciences Prof N P Shah, Biological Sciences		
Course Objectives	To enable student to appreciate the multidisciplinary nature farmer's field to the dinner table, a basic understanding of for covered. Food safety, food selection behaviour as well instrumental to good health will be discussed. This is an independent course which can be taken by students for further studies in Food and Nutritional Science.	ood production, processing a as balanced nutrition as	and storage will be part of life style
	Students for futurer studies in Food and Nutritional Science.		

Course Contents & Topics	Topics will include food composition and functional properties of major components; food additives; food hygiene, safety and regulation; determinants of food choice; examples of complex processed foods; healthy eating-concepts and practice; essential nutrients; dietary supplements; fad diets.				processed foods;	
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the key components of food and be able to discuss their functional properties. 2. Understand the significance of food safety and be able to identify sources of contamination. 3. Understand the concept of a balanced diet. 4. Critically assess and identify quack or fad diets.					
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 1st	Y 1st sem Examination Dec				
Offer in 2015 - 2016	Υ				'	
Course Grade	A+ to F					
Grade Descriptors	Α	Demonstrate thorough grasp of the subject integrate knowledge. Demonstrate highly effe			ticulate concepts and	
	В	Demonstrate substantial grasp of the subject matter covered. Show full capacity to use the appropriate concepts and assimilate the materials to solve problems. Demonstrate effective organization / writing skills.				
	C Demonstrate general but incomplete grasp of the subject matter covered. Show ability to apply concepts to solve simple problems. Demonstrate adequate organization / writing skills.					
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Misunderstanding of the materials is not uncommon. Ability to apply concepts and solve simple problems is limited. Demonstrate basic organization / writing skills.					
	Fail	Demonstrate little or no grasp, with retentic understand concepts and show minimal comskills.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials		student-centered lear	rning	12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	S	Details		Weighting in final course grade (%)	
	Assignm	ents			20	
	Examina	tion			60	
	Test				20	
Required/recommended reading and online materials	Fenema (Brown A.	Hotchkiss J.H. & Porter N.N. Food Science. Chapman & Hall, 1995 Fenema O.R. Food Chemistry. Marcel Dekker, 1996 Brown A. Understanding Food: Principles and Preparation. Wadsworth, Cengage Learning, 2011 Whitney E. & Rolfes S.R. Understanding Nutrition. Wadsworth, Cengage Learning, 2011				
Course Website	http://mod	odle.hku.hk/				

BIOL1309 Evolutionary div	versity (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota	105	
Course Co-ordinator	Prof R M K Saunders, Biological Sciences (saunders@hk	xu.hk)		
Teachers Involved	Prof R M K Saunders, Biological Sciences Prof Y Sadovy, Biological Sciences Dr M Yasuhara, Biological Sciences TCB, Biological Sciences			
Course Objectives	To provide students with an introduction to the diversity resulted in fundamental changes in our understanding evolutionary trees will be used as the basis for a survey of for understanding how structures, processes and behavior	g of evolutionary history (phy of different groups in phylogene	logeny). Current tic sequence, and	
Course Contents & Topics	Introduction to the methodology for reconstructing the sequence of past evolutionary events (cladistics algae (Rhodophyta, Phaeophyta and Chlorophyta); non-vascular plants (Hepatophyta, Anthocerophyt and Bryophyta); seedless vascular plants (Lycophyta, Psilophyta, Sphenophyta and Pterophyta); see plants (Cycadophyta, Ginkgophyta, Coniferophyta, Gnetophyta and Anthophyta); invertebrates (Cnidaria Platyhelminthes, Annelida, Mollusca, Nematoda, Arthropoda and Echinodermata); fish (Chondrichthye and Actinopterygii); amphibians (Batrachomorpha); reptiles (Anapsida, Lepidosauromorpha and Archosauromorpha); and mammals (Monotremata, Metatheria and Eutheria).			
Course Learning Outcomes	On successful completion of this course, students should 1. Interpret phylogenies in order to understand the relat evolutionary changes in structures, processes and behavi 2. Describe the characteristics of different evolutionary names of the main taxonomic groups. 3. Explain the possible selective advantages of the highlighted.	tedness of taxonomic groups a iours. Iineages of plants and anima	ls and recall the	

Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 2n	d sem		Examination	May	
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advancourse learning outcomes, with extensive us logical thinking. Apply highly effective preser	se of named examples. She			
	В	Demonstrate substantial command of know some use of named examples. Show evide skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes, with only limited use of named examples. Show evidence of some critical abilities and logical thinking. Apply moderately effective presentation skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes, with insufficient use of named examples. Show evidence of limited critical abilities and logical thinking. Apply limited presentation skills.				
	Fail	Demonstrate little or no evidence of commoutcomes, without use of named example Presentational skills are minimally effective or	s. Show little or no evide			
Course Type	Lecture v	vith laboratory component course				
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Lectures	:			24	
	Laborato	ory			36	
	Reading / Self study				100	
Assessment Methods and Weighting	Method	S	Details		Weighting in final course grade (%)	
	Examina	ation			70	
	Laborato	pry reports			30	
Required/recommended reading and online materials		ven, R. F. Evert & S. E. Eichhorn: Biologopert & R. D. Barnes: Invertebrate Zoolog			rk, 2005, 7th ed.)	
Course Website	http://ww	w.biosch.hku.hk/ecology/lsc/				

BIOL1501 Bioethics (6 cre	dits)	Academic	Year	2014	
Offering Department	Biological	Sciences Quota		40	
Course Co-ordinator	Prof F C C	Leung, Biological Sciences (fcleung@hku.hk)			
Teachers Involved	Prof F C C	Leung, Biological Sciences			
Course Objectives	The aim is	e aim is to explore the ethical implications of the latest major advances in biology and medicine.			
Course Contents & Topics	major adva limited to: dying, env	e course will discuss research ethic between student and mentor, and ethical implications in reco- jor advancements in biological and medical sciences. Major areas to be discussed include but are ted to: genetics, reproduction, disease diagnosis and therapy, development, transplantation, agin ng, environment, and the use of animals in research. Ethical and moral principles and implications cial framework and public policy raised by these advances will be discussed.			
Course Learning Outcomes	Familia bioethics s Reflect understand Understand	rize with the current ethical theories, discussions, and arguments taking specifically related to the advancement of modern molecular biology and upon and formulate in a professional manner their own opinions on the dand enter into a respectful dialogue with those who possess another potent the basis of one's own position, as well as the basis of another personant the quandaries that arise when facing modern medical technology and	genoming e matte int of vi en's opi	cs. ers as well as to ew. nion.	
Pre-requisites (and Co-requisites and Impermissible combination)	NIL				
Offer in 2014 - 2015	N	Examinati	on		
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use communication skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective individual as well as collaborative-based organizational and presentational skills.			
	В	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use communication skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective individual as well as collaborative-based organizational and presentational skills.			
		Demonstrate general but incomplete grasp of the subject matter covered. Show some			

	С	communication skills and techniques and an	n limited competence in professional-level alysis of data and results to draw moderately a ms. Demonstrate moderately individual as we	ppropriate but sometimes		
	D	Show some evidence of coherent and logica Use communication skills and techniques ar	retention of some relevant information, of the il thinking, but lacking competence in professio danalysis of data and results to draw sometin s. Demonstrate individual as well as collabora ess.	nal-level problem solving. mes appropriate but often		
	Fail	Demonstrate little or no grasp, with retention of little relevant information, of the subject matter cover coherent and logical thinking, and minimal competence in professional-level problem solving. Use skills and techniques and analysis of data and results ineffectively, leading generally to inapproper reroneous conclusions to real-world problems. Demonstrate ineffectiveness individual as well as or organizational and presentational skills.				
Course Type	Lecture-ba	ased course				
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Assessment			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	ents	continuous assessment of essays, presentation and debate exercises	60		
	Examina	tion		40		
Required/recommended reading and online materials	NIL Library &	web-based reading materials				
Additional Course Information	This cours	se will be offered subject to a minimum	enrollment number and availability of	teachers.		

- '	dits)		Academic Year	2014
Offering Department	Biological	Sciences	Quota	50
Course Co-ordinator	Prof F C C	Leung, Biological Sciences (fcleung@hku.hk)		
Teachers Involved	Prof F C C	Leung, Biological Sciences		
Course Objectives	human ger quality of I with. The	tive is to expose students to the impacts of genes to nome and many agricultural crops and animals genome ife as well as lots of technical and ethical issues/chall goal of this course is to open up students from all back gene and its impact on various scientific and social discipance.	es, it brings not only pror enges that general pub grounds to this basic u	nises of a bette lic need to dea
Course Contents & Topics	Introduction Basic gene Basic Mole Bacterial G Human Ge Human Ge Genes and Genes and Genes and Genes and Genes and		nd cloning	
Course Learning Outcomes	1. Demons 2. Gain de	sful completion of this course, students should be able to strate understanding and to explain the principle of inherities op understanding about the advancement of biotechnologue and explain the benefits and shortcomings of the app	itance, recombinant DN	· ·
	NIL			
(and Co-requisites and		dents with level 3 or above in HKDSE Biology or Combi	ined Science with Biolog	gy component o
and Co-requisites and mpermissible combination)	Not for stu	•	ined Science with Biolog	gy component o
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Not for stu- equivalent.	•		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Not for studequivalent.	•		,
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Not for studequivalent. N Y	•	Examination strong analytical and critical rofessional-level problem sol lits to draw appropriate and in	abilities and logical ving. Critically use sightful conclusions

	С	critical abilities and logical thinking wit communication skills and techniques and an	o of the subject matter covered. Show some eventh limited competence in professional-level nalysis of data and results to draw moderately alems. Demonstrate moderately individual as we	problem solving. Use propriate but sometimes
	D	Show some evidence of coherent and logic Use communication skills and techniques a	retention of some relevant information, of the al thinking, but lacking competence in profession ind analysis of data and results to draw sometin ms. Demonstrate individual as well as collaboratess.	nal-level problem solving. nes appropriate but often
	Fail	coherent and logical thinking, and minimal skills and techniques and analysis of data	n of little relevant information, of the subject mati competence in professional-level problem solv and results ineffectively, leading generally to in ms. Demonstrate ineffectiveness individual as we	ring. Use communication nappropriate and usually
Course Type	Lecture-ba	ased course		
Course Teaching	Activitie	s	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading	/ Self study	including 45 hours on 15 essay/report writing, 30 presentation (include preparation)	93
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)
	Assignme	ents	discussion forum	35
	Essay		essays & written reports	25
	Presenta	tion	poster & oral presentation	30
	Test		in-class participation & quizzes	10
Required/recommended reading and online materials	Library & web-based reading materials			
and online materials				

BIOL2102 Biostatistics (6	credits)		Academic Year	2014		
Offering Department	Biological	Sciences	Quota	135		
Course Co-ordinator	Dr G Pana	agiotou, Biological Sciences (gipa@hku.hk)				
Teachers Involved	Dr G Pana	agiotou, Biological Sciences				
Course Objectives	students t	The purpose of this course is to familiarise students with probability and statistics. The course will give to students the skills to read, interpret, and critically evaluate the statistics used in medical and bioinformatic studies. The course will also introduce the students to the fundamental principles and planning techniques to be able to analyze their own data, choose the correct statistical test and avoid common statistical pitfalls.				
Course Contents & Topics	Normal P	Introduction to Statistics; Describing, Exploring and Comparing Data; Probability; Probability Distributions Normal Probability Distribution; Relations between Distributions; Interval estimation; Hypothesis Testing Correlation and Regression; Statistical tests; Non-Parametric Inference.				
Course Learning Outcomes	1. Formula 2. Design 3. Make q 4. Use R 1 5. Unders 6. Use Vir	On successful completion of this course, students should be able to: 1. Formulate biological questions into statistical questions. 2. Design experiments effectively. 3. Make quantitative estimation of biologically meaningful parameters. 4. Use R to carry out some of the statistical computations. 5. Understand the assumptions of commonly used statistical methods. 6. Use Virtual Laboratories for Next Generation Sequencing experiments. 7. Evaluate critically the medical literature.				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in BIOC1600 Perspectives in biochemistry or BIOL1110 From molecules to cells or BIOL2306 Ecology and evolution or ENVS1301 Environmental life science or ENVS2002 Environmental data analysis				
Offer in 2014 - 2015	Y 2nd	sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough grasp of the subject and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Apply highly effective computational skills and techniques for basic statistical analyses. Be able to critically use data and statistical results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial grasp of the subject and skills required for attaining at least most of the course learning outcomes. Present evidence of analytical and critical abilities and logical thinking. Apply effective computational skills and techniques for basic statistical analyses. Be able to correctly use data and statistical results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	Demonstrate general but incomplete grasp of the subject and skills required for attaining some of the course learning outcomes. Present evidence of some analytical and critical abilities and logical thinking. Apply moderately effective computational skills and techniques for basic statistical analyses. Demonstrate mostly correct but some erroneous					

		use of data and statistical results to drapresentational skills.	aw appropriate conclusions. Apply mod	erately effective organizational and
	D	Demonstrate partial and limited grasp o outcomes. Present evidence of some con Apply limited or barely effective compulimited ability to use data and statistical organizational and presentational skills.	pherent and logical thinking, but with linutational skills and techniques for basic	nited analytical and critical abilities. c statistical analyses. Demonstrate
	Fail	Demonstrate evidence of little or no gras outcomes. Present evidence of little or minimally effective or ineffective compu misuse of data and statistical results ar ineffective organizational and presentation	lack of analytical and critical abilities, loutational skills and techniques for basional/or unable to draw appropriate concludes.	ogical and coherent thinking. Apply c statistical analyses. Demonstrate
Course Type	Lecture-based course			
Course Teaching & Learning Activities	Activities		Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials		including projects	24
	Reading / Self study			100
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)
	Assignments			50
	Examination			50
Required/recommended reading and online materials	Zar, J. H.	Biostatistical Analysis (Prentice-Ha	ıll / Englewood Cliffs, N.J., 1999,	4th edition)
Course Website	http://mod	odle.hku.hk/		

BIOL2103 Biological scien	nces labor	atory course (6 credits)	Academic Year	2014			
Offering Department	Biological S	Sciences	Quota	215			
Course Co-ordinator	Dr W Y Lui	Dr W Y Lui, Biological Sciences (wylui@hku.hk)					
Teachers Involved	Prof B K C	Dr W Y Lui, Biological Sciences Prof B K C Chow, Biological Sciences Dr A Yan, Biological Sciences					
Course Objectives	biological	The objective is to provide students a comprehensive training in basic laboratory techniques used in moder biological studies. The course will cover a number of techniques used by molecular biologists and microbiologists to conduct scientific research.					
Course Contents & Topics	Module one DNA & RN analysis. Module two Centrifugat Module thre Microscopy and serial	This course will be divided into three modules and each module will have 3 laboratory sessions. Module one: Nucleic acid analysis DNA & RNA isolation, spectrometry, gel electrophoresis, restriction enzyme analysis and DNA seque analysis. Module two: Protein analysis Centrifugation, chromatography and SDS-PAGE electrophoresis. Module three: Microbiology Microscopy, observation of microorganisms and staining of bacteria, isolation of pure cultures by streak and serial dilution, enumeration of microbial cells by Petroff-Hausser counting chamber, and turbic Identification and classification of microbes from natural source and statistical analysis.					
Course Learning Outcomes	 Demons Demons setting. Master s Underst 	sful completion of this course, students should be a trate knowledge in proper use of simple research er trate knowledge and understanding of how and w ome basic laboratory techniques for carrying out ex and the different ways that microorganisms were response to dye etc. and how they were counted.	quipment. hy certain techniques are periments.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIO	DL1110 From molecules to cells					
Offer in 2014 - 2015	Y 1st s	em 2nd sem	Examination	Dec May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.						
	B Demonstrate substantial command of a broad range of knowledge required for attaining at least most of the course learning outcomes. Evidence of analytical and critical abilities and logical thinking. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.						

		and techniques. Mostly correct but some moderately effective organizational and p	e erroneous use of data and results to draw appropresentational skills.	priate conclusions. Apply		
	D	Evidence of some coherent and logical th	d of knowledge required for attaining some of the coninking, but with limited analytical and critical abilities on use data and results to draw appropriate conclusional skills.	s. Apply partially effective		
	Fail	Demonstrate little or no evidence of command of knowledge required for attaining the course learning outcom Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Apply minimally effective ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusion Organization and presentational skills are minimally effective or ineffective.				
Course Type	Laborato	Laboratory and workshop course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Laboratory		11 laboratory sessions (4 hours each)	44		
	Tutorials		lecture/tutorials	18		
	Reading	g / Self study		100		
Assessment Methods and Weighting	Method	ls	Details	Weighting in final course grade (%)		
	Laborat	ory reports		60		
	Test		1 hour final examination	40		
Course Website	http://mo	oodle.hku.hk/				
Additional Course Information	Lab A or Quota 13	Quota 80 - 1st Semester Lab A on Wed. with 40 students and Lab. B on Thurs. with 40 students Quota 135 - 2nd Semester Lab C on Wed. with 25 students; Lab. D on Thurs. with 65 students and Lab. E on Fri. with 45 students				

BIOL2220 Principles of bi	ochemistry	(6 credits)		Academic Year	2014	
Offering Department	Biologica	Sciences		Quota	100	
Course Co-ordinator	Dr C S C	Lo, Biological Sciences (clivelo@hku	.hk)			
Teachers Involved	Dr C S C	Dr C S C Lo, Biological Sciences				
Course Objectives		This course is designed to provide undergraduate (non-biochemistry major) an overview of fundamental concepts in biochemistry as well as hands-on experience in biochemical techniques.				
Course Contents & Topics	with emp	An introduction to various biomolecules in terms of their structures, functions, syntheses and metabolisms, with emphasis on amino acids, proteins, enzymes, carbohydrates, lipids and nucleic acids. The correlations between their biochemical properties and their roles in various life processes will be illustrated.				
Course Learning Outcomes	On succe					
	2. Unders	 Describe the key structural features of carbohydrates, proteins, lipids and nucleotides. Understand the basic enzyme kinetic properties. Explain how the common sugars, fatty acids and amino acids are metabolized and synthesized in licells. 				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in BIOL1110 From molecules to cells; and Not for students who have passed in BIOC2600 Basic biochemistry or have already enrolled in this course.				
Offer in 2014 - 2015	Y 1st	Y 1st sem Examination Dec			Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Integration of the full range of appropriate theories, principles, evidence and techniques					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. General integration of theories, principles, evidence and techniques				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Some partial integration of theories, principles, evidence and techniques				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Limited integration of theories, principles, evidence and techniques				
	Fail	Demonstrate little or no evidence of com- outcomes. Lack of analytical and critical al knowledge to solve problems. Little or no o	bilities, logical and coherent th	ninking. Show very little	or no ability to apply	
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities						

	Laboratory	3 laboratory sessions	24
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		60
	Laboratory reports		10
	Test		30
Required/recommended reading and online materials	L.A. Moran, H.R. Horton, K.G. Scrim International Edition)	geour, M.D. Perry: Principles of Biochen	nistry 5th edition (Pearson
Course Website	http://moodle.hku.hk/		

BIOL2306 Ecology and ev	olution (6 c	redits)	Academic Year	2014		
Offering Department	Biological	Sciences	Quota	140		
Course Co-ordinator	Prof D Duo	dgeon, Biological Sciences (ddudgeon@hku.hk)				
Teachers Involved		Prof D Dudgeon, Biological Sciences Prof G A Williams (Field course component only), Biological Sciences				
Course Objectives	order to e interaction understand componen	The interaction between organisms and their environment is addressed using an issue-based approach i order to explains how the ecology of plants and animals has been shaped by evolution through interactions with their living and non-living environment. The course also demonstrates how we call understand and explain the significance of what we see in nature using scientific methods. A field cours component provides the opportunity to investigate how the environment influences community composition, biodiversity and adaptive radiation in a variety of habitats.				
Course Contents & Topics	they live a influences responsible some basi by physiole biodiversity of populate ecology a describing and the mwill conclused Lectures a visit a varelationshi	nment influences organisms profoundly. It affects their and how many can survive there) and, through natural their form and adaptations. Present day human-induce for endangering species and degrading their habic c scientific principles of ecology and evolution, showir ogical tolerances and evolutionary adaptation which, if y. Individuals and their interactions will be a major focition dynamics, community structuring, life histories, and evolution resulting from interaction with the enteredity of modern humans, including our fossil ratio ecological transformations caused by humans and de with an account of the importance of biodiversity, a recomplemented by a 5-day residential field course riety of Hong Kong habitats to study their biodiv p between organisms and their environment	al selection acting over ced changes to the envi tats. This introductory or ing how they are linked to in turn, lead to specializa cus of the course together and niche dynamics. The vironment will also be or ecord and relationship to their environmental impand the factors that threat during the Reading Wee ersity, community comp	past generations ronment are als ourse introduce of the environment and generation and generation and generation from the principles of demonstrated by oother primates oacts. The coursen it globally, ek when student		
Course Learning Outcomes	On successful completion of this course, students should be able to:					
	ecological 2. Underst adaptation 3. Underst environme 4. Unders example. 5. Unders	tand how scientific methods (hypotheses, experimen and evolutionary processes. and the basic mechanism of natural selection, and how and generate biodiversity. tand that ecology and behaviour can be interpreted in the upon individual organisms. tand the ecological factors influencing evolution, us tand the community ecology and biodiversity of selections of organisms found there.	w interactions with the en	evironment lead to ressures from the onary tree as all		
Pre-requisites (and Co-requisites and Impermissible combination)		BIOL1309 Evolutionary diversity or BIOL1110 Frental life science or ENVS1401 Introduction to environ		or ENVS1301		
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Evidence of complete or near-complete understanding and a thorough grasp of the subject as demonstrated by attainment of all learning outcomes, and excellent use of named (organism) examples, including local species and habitats. Show excellent organizational, presentational and/or analytical skills and fieldwork techniques. Excellent or outstanding (for A+) work relative to what is required at degree level.					
	B Evidence of substantial understanding and a good grasp of the subject as demonstrated by attainment of the majority of learning outcomes, and use of named (organism) examples, including local species and habitats. Show good organizational, presentational and/or analytical skills and fieldwork techniques. Work more than sufficient for what is required at degree level.					
	С	Evidence of general understanding with an adequate (but inco general but incomplete attainment of most of the learning outcom Show fair organizational, analytical, presentational and/or analytic for what is required for degree level.	nes, with limited use of named (organism) examples		
	D	Evidence of retention of a minimum of relevant information a knowledge is very incomplete), as demonstrated by partial but I familiarity with fieldwork techniques, habitats or organisms. Worl required at degree level.	imited attainment of learning of	utcomes. Insufficien		

	Fail	Evidence of poor or inadequate knowledge outcomes cannot be attained. Little or no ev Work fails to reach degree level.		
Course Type	Lecture wit	th laboratory component course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
& Learning Activities	Lectures		24 hours lectures, plus 10 hours of lectures during residential field course	34
	Laborator	у	at least 36 hours field and laboratory work, as groups and individuals	36
	Reading / Self study		during the semester in the form of internet tutorials, assigned reading and a laboratory workshop	80
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts		40
	Examinati	on		60
Required/recommended reading and online materials	in HKU libr Stiling, P. (An up-to-c	Silk, J.B. (1997) How Humans Evolve ary.) (2002) Ecology: Theories and Applicational Application	ons (4th Edition). Prentice Hall, Sing scientific literature, background rea	apore.
Course Website	http://www	.biosch.hku.hk/ecology/lsc/		
Additional Course Information	Details of	ory 5-day residential field component d the location and cost of the residentia 1, will be made available at the start d lable).	I field course, which will be held in t	the Reading week of 2014-2015 was \$830

· ,	gy and env	ironmental adaptation (6 credits)	Academic Year	2014		
Offering Department	Biological S	Sciences	Quota	40		
Course Co-ordinator	Prof A O L	Wong, Biological Sciences (olwong@hku.hk)				
Teachers Involved	Prof A S T	Wong, Biological Sciences Wong, Biological Sciences , Biological Sciences				
Course Objectives	aquatic hat especially of environmer	e covers the major aspects of animal physiology for epitats. Stress will be given to the functional interactions on the mechanisms by which animals obtain resources ntal changes via sensory structures, and respond to a forms & functions.	s between animals and t for survival from the env	he environment ironment, detec		
Course Contents & Topics	energy me inter-tidal, a adaptations Background signals: fur navigation environmer	cepts of animal adaptation to environmental changes tabolism according to oxygen availability; Different mand terrestrial habitats; Cross-adaptation to different as in mammals; Visual signals & differential levels of phad adaptation: functions & mechanisms for color presentions & mechanisms of detection in aquatic & terres without visual signals; Behavioral, morphological & ht: extreme hot vs freezing cold; salinity changes in labitats on osmoregulation, water balance & nitrogenou	odels of gaseous excha- environment: air-breathin otoreception from protoz entation; Sound wave as strial habitats; Echo sour & physiological adaptat aquatic habitats & wate	nge for aquatic, g fish vs diving to mammals environmental ding in bats for tons in hostile		
Course Learning Outcomes	1. Have a b	sful completion of this course, students should be able to proad understanding on functional interactions between the the role of the environment in shaping the evolution hend a wide range of physiological adaptations (both shall stress.	animals and their enviro of animal structures & fu	nctions.		
Pre-requisites (and Co-requisites and Impermissible combination)		IOL2103 Biological sciences laboratory course or B Biostatistics or BIOL2306 Ecology & evolution	IOL2220 Principles of I	piochemistry or		
	N	N Examination				
Offer in 2014 - 2015			Examination			
	Υ		Examination			
Offer in 2015 - 2016			Examination			
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Υ	Demonstrate thorough mastery at an advanced level of extensive learning outcomes. Show strong analytical and critical abilities and and ability to apply knowledge to a wide range of complex, familia organizational skills. Writings consistently demonstrate informed range of relevant concepts.	e knowledge required for attai l logical thinking, with evidence ar and unfamiliar situations. Ap	ning all the course of original thought, ply highly effective		

		learning outcomes. Show evidence of anal knowledge to familiar and some unfamilia demonstrate informed, thoughtful intellectual of	ar situations. Apply effective of	organizational skills. Writings mostly		
	С	Demonstrate general but incomplete commo outcomes. Show evidence of some analytical to most familiar situations. Apply moderate intellectual engagement with concepts or thec	and critical abilities and logical all effective organizational skill	thinking, and ability to apply knowledge s. Writings mostly indicate informed,		
	D	Demonstrate partial but limited command of k Show evidence of some coherent and logica ability to apply knowledge to solve problems. some intellectual engagement with concepts of	I thinking, but with limited analy Apply limited or barely effective	tical and critical abilities. Show limited organizational skills. Writings indicate		
	Fail	Demonstrate little or no evidence of command of knowledge required for attaining the course learning of Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply kn to solve problems. Organizational skills are minimally effective or ineffective. Writings reveal an abstintellectual engagement with concepts or theories. Writings are irrelevant or superficial.				
Course Type	Lecture-ba	Lecture-based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	nts		25		
	Examinati	on		75		
Required/recommended reading and online materials	 E. N. Marieb (2012) Essentials of Human Anatomy & Physiology. Benjamin Cummings. C. L. Stanfield (2011) Principles of Human Physiology, Benjamin Cummings. R. W. Hill, G. A. Wyse & M. Anderson (2008) Animal Physiology, Sinauer Associate, Inc., Sunderland C. D. Myoyes & P. M. Schulte (2008) Principles of Animal Physiology. Benjamin Cummings. 			mings. uer Associate, Inc., Sunderland		
Course Website	http://mood	dle.hku.hk/				
Additional Course Information		e Website of School of Biological Scier e will be offered subject to a minimum		vailability of teachers.		

BIOL3107 Plant physiolog	y (6 credits	s)		Academic Year	2014	
Offering Department	Biological	Sciences		Quota	30	
Course Co-ordinator	Dr W K Yip	Dr W K Yip, Biological Sciences (wkyip@hku.hk)				
Teachers Involved	Dr W K Yi	Dr W K Yip, Biological Sciences				
Course Objectives		To give an understanding of plant processes such as plant growth and development and their regulatory mechanisms.				
Course Contents & Topics	signal tran	Discovery, assay, chemical nature, mechanism, structure-activity relationships, physiological effects, and signal transduction of plant hormones. Hormonal transport. Selected topics on plant growth and development including photo-morphogenesis, seed germination, dormancy, apical dominance, fruit ripening, leaf abscission, and plant defense.				
Course Learning Outcomes	1. Underst 2. Underst	On successful completion of this course, students should be able to: 1. Understand the study of plant biology using mutants in model plant Arabidopsis. 2. Understand biotechnological opportunities by manipulating plant gene expression. 3. Understand the regulation of plant growth and development by various plant hormones.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Blo	OL2103 Biological sciences laborator	y course			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A In written examination: Exceptionally good organization and presentation, the discussion would be very clearly written and show evidence of originality. In practical sessions: excellent insight in to the practical aims; submit good reports.					
	В	In written examination: coherent organization and clear presentation, the discussion would be a complete and critical response to questions. In practical sessions: full understanding of the practical aims; submit accurate reports.				
	C In written examination and practical sessions: Good in parts, but important points omitted. Might also have defects in presentation or be not very well written. Reasonably competent, but might show misunderstanding of the material: significant inaccuracies or errors.					
	D	In written examination and practical sessic deficiencies in understanding, organization category.				
	D Fail	deficiencies in understanding, organization	, clarity or accuracy. Write- ns: Poor knowledge and und	ups that are unduly bri	ef would fall into this	
Course Type	Fail	deficiencies in understanding, organization category. In written examination and practical session	, clarity or accuracy. Write- ns: Poor knowledge and und	ups that are unduly bri	ef would fall into this	

	Lectures		24			
	Laboratory		24			
	Tutorials		6			
	Reading / Self study		100			
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)			
	Examination		75			
	Laboratory reports		25			
Required/recommended reading and online materials	P. J. Davis: Plant Hormones: Physiology, Bioche 1995, 2nd ed.) Lecturing materials and journal articles will be po-	3, (inus Nijhoff Publishers,			
Course Website	http://moodle.hku.hk/	http://moodle.hku.hk/				
Additional Course Information	This course will be offered subject to a minimum	enrollment number and availability	of teachers.			

BIOL3108 Microbial physic	ology (6 cr	edits)		Academic Year	2014	
Offering Department	Biological	Sciences		Quota	50	
Course Co-ordinator	Dr A Yan,	Biological Sciences (ayan8@hku.hk)				
Teachers Involved	Dr A Yan,	Biological Sciences				
Course Objectives	pharmace provides r essential Microbiolo	Microbes are amazing and important entities on earth. Knowledge of microbes is widely applied in foo pharmaceutics, biotechnologies, diseases control, and biogeochemical processes. Microbial Physiolog provides molecular basis for understanding of these important processes and applications, and to serve a essential foundations for sub-disciplines of Microbiology, such as environmental, industrial, and medicin Microbiology. Upon completion, students will acquire fundamental knowledge and methodologies for microbial studies and be able to relate knowledge to various microbial applications.				
Course Contents & Topics	Physiolog Adaption's presented for the st Generation a coherer	Serving as a fundamental course for the understanding of the world of microorganisms, Microbia Physiology is organized and presented in three themes: 'Microbial Rules', 'Microbial Breath', and 'Microbia Adaption'. Under these three themes, a broad range of highly educational and interesting topics are presented including: 'Microorganisms and their position in the living world', 'Fundamental methodologie for the study of microbes', 'Microbial structures and functions', 'Microbial growth and control', 'Energ Generation', 'Central metabolism', and 'Regulation and control of metabolic Activities'. Topics are taught if a coherent manner with a highly interactive tutorial session following each of the topics such that student will achieve a high quality, stimulating, and problem-based learning experiences.				
Course Learning Outcomes	On succe	ssful completion of this course, students	should be able to:			
	Compre Relate	 Appreciate the diversity of microbial metabolisms and the strategies for their adaptive responses. Comprehend the principles underlying the dynamic nature of microbial physiology. Relate knowledge to practical application of microbes in industry and medicine. Develop abilities to read and assess scientific literatures in microbiology area. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL2103 Biological sciences laboratory c	ourse			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ		'			
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational skills.					
	B Demonstrate substantial command of a broad range of knowledge required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational skills.					
	C Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational skills.					
	D Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills.					
	Fail	Demonstrate little or no evidence of command Lack of analytical and critical abilities, logical au to solve problems. Organizational skills are min	nd coherent thinking. Sho	w very little or no ability		
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures	-			36	
	Tutorials				12	
	Project w				2	
	,	/ Self study			100	
		-				

and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		10
	Examination		50
	Test	mid-term I (20%), mid-term II (20%)	40
Required/recommended reading and online materials	Primary Text Book: Prescott, Harley, and Klein's Microbiology, by Jo Woolverton, published by McGraw-Hill Supplementary Reading: On-line textbook of Bacteriology: Kenneth Tobar URL (http://www.textbookofbacteriology.net/)	•	
Course Website	http://moodle.hku.hk/		
Additional Course Information	This course will be offered subject to a minimum of	enrollment number and availability of	teachers.

BIOL3109 Environmental	microbiolo	gy (6 credits)	Academic Year	2014		
Offering Department	Biological	Sciences	Quota	40		
Course Co-ordinator	Dr J D Gu	, Biological Sciences (jdgu@hku.hk)				
Teachers Involved	Dr J D Gu	, Biological Sciences				
Course Objectives	environme which the microorga	To familarize students with the role of various microorganisms in natural process which affect our environment, such as cycling of chemical elements, interactions with plants and animals, and the way in which they carry out biodegradation of environmentally important pollutants. Selective groups of microorganism will be examined in detail for their biochemical processes. Key concepts are illustrated with known examples and cases				
Course Contents & Topics	 Contribi Microbia Microbia 	Advanced aspects of microbial diversity, ecology and growth Contribution of microbial metabolism to biogeochemical processes important in cycling of nutrients Microbial interactions with plants and animals Microbial metabolism of organic compounds, metals and man-made polymers Training in laboratory and field microbiological research technique				
Course Learning Outcomes	On succes	ssful completion of this course, students	s should be able to:			
Para ara maila ita a	biochemic 2. Know microorga 3. Apply th	Understand a range of microorganisms in the environment in terms of their roles and function as well a biochemical capability and host range. Know the specific biochemical processes, enzymes involved and reactions carried by selective microorganisms and their distribution in the environment. Apply the appropriate techniques in environmental and microbial research.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL2103 Biological sciences laboratory course					
Offer in 2014 - 2015	Y 2nd	Isem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Thorough grasp of the subject matter. Show very strong analytical and critical abilities and high logical thinking, with evidence of original thought. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	B Substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Substantial grasp of the subject. Show evidence of analytical and critical abilities and logical thinking. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	С	General but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. General but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.				
	D	Partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail	Evidence of little or no grasp of the knowled analytical and critical abilities, logical and	edge and skills required for attaining the cou- adge and understanding of the subject. Evide coherent thinking. Minimally effective or ine and/or unable to draw appropriate conclusion ineffective.	nce of little or lack of ffective lab skills and		
Course Type	Lecture wi	ith laboratory component course				
Course Teaching	Activities	S	Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laborato	ry		24		
	Field wor	•				

	Tutorials		4
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		10
	Examination		50
	Laboratory reports		25
	Presentation	including report	10
	Test		5
Required/recommended reading and online materials	M.T. Madigan, J. M. Martinko, P.V. Dunlap (Pearson/Benjamin Cummings, 2009, 12th ed.) R.M. Atlas and R. Bartha: Microbial Ecology: Fundth ed.) References Molecular Biology of the Cell - Fifth Edition by Bru Julian Lewis, Martin Raff, Keith Roberts, Peter W. R. Mitchell and JD. Gu: Environmental Microbiol ed.)	damentals and Applications (Benja ice Alberts, Alexander Johnson, alter (December 2007)	
Course Website	http://moodle.hku.hk/		
Additional Course Information	This course will be offered subject to a minimum of	enrollment number and availability	of teachers.

BIOL3110 Environmental	toxicology ((6 credits) Academic Year	2014			
Offering Department	Biological	Sciences Quota	60			
Course Co-ordinator	Dr J D Gu,	, Biological Sciences (jdgu@hku.hk)				
Teachers Involved		, Biological Sciences S Wu, Biological Sciences				
Course Objectives	fate of poll response	ce students to the basic principles of environmental and ecological toxicology lutants in lithosphere, hydrosphere, atmosphere and biosphere. Mechanisms will be analyzed through adsorption, metabolism, toxicity and elimination and enzymes involved will be highlighted. Specific cases of toxicity will .	of toxicity as dos . Major metaboli			
Course Contents & Topics	bioaccumu 2. Partition 3. Quantita 4. Emergin 5. Eliminat	Environmental chemistry of pollutants and their toxicity and factors governing toxic effect bioaccumulation and biomagnification Partitioning and transformation of environmental pollutants Quantitative toxicology using dose-response approaches Emerging endocrine-disrupting chemicals and carcinogens at molecular levels Elimination of pollutants from the environments Laboratory testing of toxicity and review various adsorption isotherm models				
Course Learning Outcomes	1. Understa	ssful completion of this course, students should be able to: and fate and distribution of chemicals in various compartments of the ecosystem of the constant toxicity through adsorption, metabolism, elimination and target site and quant mechanism of toxicity from specific pollutants of choice.				
	 Underst mineralizat 	tand specific biochemical processes and enzymes involved in pollutants t	ransformation and			
and Co-requisites and	4. Underst mineralizat 5. Underst Pass in E	tand specific biochemical processes and enzymes involved in pollutants tion.				
and Co-requisites and mpermissible combination)	4. Underst mineralizat 5. Underst Pass in E	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution antal chemistry				
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	4. Underst mineralizat 5. Underst Pass in E Environme	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution antal chemistry	n or CHEM3141			
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	4. Underst mineralizat 5. Underst Pass in E Environme Y 1sts	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution antal chemistry	n or CHEM3141			
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	4. Underst mineralizat 5. Underst: Pass in Environme Y 1sts Y	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution antal chemistry	Dec taining all the course itical abilities and high es. Critical use of data			
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	4. Underst mineralizat 5. Underst 5. Underst Pass in Environme Y 1st s Y A+ to F	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution ental chemistry sem Examination Thorough mastery at an advanced level of extensive knowledge and skills required for at learning outcomes. Thorough grasp of the subject matter. Show very strong analytical and cellogical thinking, with evidence of original thought. Apply highly effective lab skills and technique and results to draw appropriate and insightful conclusions. Apply highly effective organization	Dec taining all the course itical abilities and high es. Critical use of data and presentational st most of the course at abilities and logical			
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	4. Underst mineralizat 5. Underst 5. Underst Pass in Environme Y 1st s Y A+ to F	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution ental chemistry sem Examination Thorough mastery at an advanced level of extensive knowledge and skills required for at learning outcomes. Thorough grasp of the subject matter. Show very strong analytical and cit logical thinking, with evidence of original thought. Apply highly effective lab skills and technique and results to draw appropriate and insightful conclusions. Apply highly effective organization skills. Substantial command of a broad range of knowledge and skills required for attaining at leatering outcomes. Substantial grasp of the subject. Show evidence of analytical and critic thinking, Apply effective lab skills and techniques. Correct use of data of results to draw appropriate to draw appropriate or description.	Dec taining all the course itical abilities and high es. Critical use of data and presentational and presentational abilities and logical propriate conclusions of the course learning call abilities and logical evous use of data and logical evous			
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	4. Underst mineralizat 5. Underst 5. Underst Pass in Environme Y 1st s Y A+ to F A B	tand specific biochemical processes and enzymes involved in pollutants tition. and appropriate techniques in environmental cleaning up BIOL2103 Biological sciences laboratory course or ENVS3042 Pollution and chemistry Sem Examination Thorough mastery at an advanced level of extensive knowledge and skills required for at learning outcomes. Thorough grasp of the subject matter. Show very strong analytical and crilogical thinking, with evidence of original thought. Apply highly effective lab skills and technique and results to draw appropriate and insightful conclusions. Apply highly effective organization skills. Substantial command of a broad range of knowledge and skills required for attaining at lea learning outcomes. Substantial grasp of the subject. Show evidence of analytical and critic thinking. Apply effective lab skills and techniques. Correct use of data of results to draw apply effective organizational and presentational skills. General but incomplete command of knowledge and skills required for attaining most of outcomes. General but incomplete grasp of the subject. Evidence of some analytical and critic thinking. Apply moderately effective lab skills and techniques. Mostly correct but some error	Dec taining all the course titical abilities and high es. Critical use of data and presentationa ast most of the course al abilities and logical propriate conclusions of the course learning call abilities and logical eous use of data and ational skills. se learning outcomes of some coherent and techniques. Limited			

	analytical and critical abilities, logic techniques. Misuse of data and re presentational skills are minimally effe	al and coherent thinking. Minimally effective or is sults and/or unable to draw appropriate conclu- ctive or ineffective.	ineffective lab skills and sions. Organization and
Course Type	Lecture with laboratory component course		
Course Teaching & Learning Activities	Activities	Details	No. of Hours
a Learning Activities	Lectures		24
	Laboratory	laboratory, assignment; and seminar	36
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		60
	Laboratory reports student-based assessment includes laboratory report, assignment, presentations or other forms		40
Required/recommended reading and online materials	D.G. Crosby: Environmental Toxicology and W. Stumm, J.J. Morgan: Aquatic Chemistry 3rd ed.) R. Mitchell and JD. Gu: Environmental Michael St. Mitchell and M	r: Chemical Equlibria and Rates in Natural	
Course Website	http://moodle.hku.hk/		
Additional Course Information	This course will be offered subject to a mini	imum enrollment number and availability o	f teachers.

BIOL3201 Food chemistr	y (6 credits)		Academic Year	2014		
Offering Department	Biological	Sciences	Quota	60		
Course Co-ordinator	Dr J C Y L	Lee, Biological Sciences (jettylee@hku.hk)				
Teachers Involved	Dr J C Y L	Lee, Biological Sciences				
Course Objectives		e a basic understanding of chemistry in food s related to food science and nutrition.	ystems, and to provide pra	actical training ir		
Course Contents & Topics	minor con and chem for unders foods, and A series of	The course will cover the components of food, including water, proteins, carbohydrates and lipids, and minor components such as enzymes, vitamins, minerals, colorants, flavorants and additives. The physica and chemical properties of these important constituents of foods are covered in detail, and form the basis for understanding the reactions which occur during the production, processing, storage and handling of foods, and in understanding the methods used in analyzing foods. A series of laboratory sessions will cover analysis of food components, protein chemistry, lipid oxidation properties of sugars and starches, enzymatic and non-enzymatic browning reactions, and sensory analysis of foods.				
Course Learning Outcomes	1. Unders 2. Unders	On successful completion of this course, students should be able to: 1. Understand the functions and properties of major and minor food components. 2. Understand the basic chemistry behind food processing. 3. Have integrated their knowledge of biological and chemical principles into a food science and nutritio context.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOC2600 Basic biochemistry or BIOL2220 Principle	es of biochemistry			
Offer in 2014 - 2015	Y 2nd	l sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	В	Demonstrate thorough grasp of the subject matter covered topics covered and can readily apply this knowledge. Critical results to draw appropriate and insightful conclusions. Demonstrate substantial grasp of the subject matter cover content and a high level of competence in the topics cove situations. Use lab skills and techniques and analysis of data	ed. Show thorough knowledge and red and able to apply this knowled	d analysis of data and understanding of the ge and skills to most		
	C Demonstrate general but incomplete grasp of the subject matter covered. The student has a sound knowledge and understanding of the main areas of content and has achieved an adequate level of competence in the topics covered. Use lab skills and techniques and analysis of data and results to draw moderately appropriate conclusions.					
	С	understanding of the main areas of content and has ach	nieved an adequate level of comp	etence in the topics		
	C D	understanding of the main areas of content and has ach	nieved an adequate level of comp and results to draw moderately app me relevant information of the sult and has achieved a limited level	etence in the topics ropriate conclusions. Dject matter covered. of competence in the		
		understanding of the main areas of content and has act covered. Use lab skills and techniques and analysis of data Demonstrate partial but limited grasp, with retention of so Show a basic knowledge and understanding of the content topics covered. Use lab skills and techniques and analys	nieved an adequate level of comp and results to draw moderately app me relevant information of the sut t and has achieved a limited level is of data and results to draw app want information, of the subject me content and has achieved very I is and analysis of data and results	etence in the topics ropriate conclusions. oject matter covered. of competence in the propriate conclusions matter covered. Show imited competence in		
Course Type	D Fail	understanding of the main areas of content and has act covered. Use lab skills and techniques and analysis of data Demonstrate partial but limited grasp, with retention of so Show a basic knowledge and understanding of the content topics covered. Use lab skills and techniques and analys occasionally. Demonstrate little or no grasp, with retention of little relementary knowledge and understanding in few areas of the some of the topics covered. Use lab skills and techniques	nieved an adequate level of comp and results to draw moderately app me relevant information of the sut t and has achieved a limited level is of data and results to draw app want information, of the subject me content and has achieved very I is and analysis of data and results	etence in the topics ropriate conclusions. oject matter covered of competence in the propriate conclusions matter covered. Show imited competence in		

& Learning Activities	Lectures		24
	Laboratory		24
	Tutorials		6
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		30
	Examination		70
Required/recommended reading and online materials	Fennema OR, Food Chemistry (Mar Belitz HD, Grosch W, Schieberle, P,	cel Dekker 4th Ed, 2008) Food Chemistry (Springer 4th Ed, 20	009)
Course Website	http://moodle.hku.hk/		

BIOL3202 Nutritional biod	hemistry (6	credits)	A	cademic Year	2014	
Offering Department	Biological	Sciences	Q	uota	100	
Course Co-ordinator	Dr E T S L	i, Biological Sciences (etsli@hku.hi	k)			
Teachers Involved	Dr E T S L	i, Biological Sciences				
Course Objectives		uce the fundamental concepts of a setween diet and intermediary me		rated approach	in discussing the	
Course Contents & Topics	of macron	nutrients and their requirements. Enutrient utilization. Nutritional impards. Dietary recommendations.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the concept of nutrient requirements. 2. Explain how different organs coordinate to achieve metabolic control of glucose homeostasis. 3. Understand the metabolic pathways of various polyunsaturated fatty acids. 4. Understand the theoretical constructs of nitrogen requirement and the importance of the urea cycle. 5. Assess the impacts of dietary inadequacy.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	OL2220 Principles of biochemistry of	or BIOC2600 Basic biocher	mistry		
Offer in 2014 - 2015	Y 1st	Y 1st sem		xamination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject matter covered. Show exceptional ability on knowledge integration, problem identification and solving. Show outstanding ability to critically analyze and interpret scientific data and draw appropriate conclusions. Demonstrate highly effective organization / writing skills.					
	В	Demonstrate substantial grasp of the subject matter covered. Show full ability on knowledge integration, problem identification and solving. Show reasonable ability to critically analyze and interpret scientific data and draw appropriate conclusions. Demonstrate effective organization / writing skills.				
	С	Demonstrate general but incomplete grasp of the subject matter covered. Might show misunderstanding of the materials. Show some ability on knowledge integration, problem identification and solving. Show some ability to analyze and interpret scientific data and draw proper conclusions. Demonstrate adequate organization / writing skills.				
	D	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Misunderstanding of the materials is not uncommon. Show limited ability on knowledge integration, problem identification and solving. Use elementary approaches to analyze and interpret scientific data and draw sometimes erroneous conclusions. Demonstrate basic organization / writing skills.				
	Fail					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials		tutorials/guided studie	es	12	
	Reading	/ Self study	-		100	
Assessment Methods and Weighting	Methods		Details		Veighting in fina	
	Assignme	ents			15	
	Examinat	tion			70	
	Test				15	
Required/recommended reading		. Metabolic regulation: A Human Pe P.C., Harvey R.A. & Ferrier D.R. Lip			Lippincott, 2008	

BIOL3203 Food microbiol	ogy (o crear			Academic Year	2014
Offering Department	Biological S	Sciences		Quota	60
Course Co-ordinator	Dr H S El-N	Nezami, Biological Sciences (elnezami	@hku.hk)		
Teachers Involved	Dr H S El-N	Nezami, Biological Sciences			
Course Objectives		e provides the key concepts and prin- between microorganisms and food., n detail.	•	0, 1	•
Course Contents & Topics	their signi	and enumeration of microbes in food ficance, Physical methods of food als, Foodborne pathogens.			
Course Learning Outcomes	On success	sful completion of this course, students	s should be able to:		
	 Demonsthat can sp Develop a food. 	e methods for evaluating microorganisi trate an understanding of the causes of oil a given food. and implement appropriate measures trate the ability to work in a team to inv	of food spoilage, and to control the spoila	d predict response age and pathogenic	microorganisms ir
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIC	DC2600 Basic biochemistry or BIOL22	20 Principles of biod	chemistry	
Offer in 2014 - 2015	Y 2nd	Y 2nd sem			May
Offer in 2015 - 2016	Υ	Υ			'
Course Grade	A+ to F	A+ to F			
Grade Descriptors	A	Demonstrate thorough grasp of the subject r thinking, with evidence of creative ability and skills and techniques and analysis of data and problems. Demonstrate highly effective team-	d competence in profess nd results to draw appro	sional-level problem soli priate and insightful co	ving. Critically use lab
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.				
			s to draw generally app	propriate conclusions to	
	С		s to draw generally apponal and presentational so of the subject matter covid competence in profess of draw moderately approp	propriate conclusions to kills. Pered. Show some evid sional-level problem solv priate but sometimes en	ence of analytical and ving. Use lab skills and roneous conclusions to
	C	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to	s to draw generally apponal and presentational signal and presentational signal and presentational signal and professory of the subject matter covered to draw moderately approprietly effective team-based or etention of some relevant thinking, but lacking comfort and results to draw draw and results to dra	propriate conclusions to kills. ered. Show some evidicional-level problem solveriate but sometimes enganizational and present information, of the supetence in professional w sometimes appropria	real-world problems. ence of analytical and ring. Use lab skills and roneous conclusions to tational skills. bject matter covered. Level problem solving. te but often erroneous
		Demonstrate effective team-based organization of the control of th	s to draw generally apponal and presentational s' of the subject matter cover of competence in profess of draw moderately appropression of the subject matter cover of the subject matter of the subje	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter covered. -level problem solving, te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous
Course Type	D Fail	Demonstrate effective team-based organization of the control of th	s to draw generally apponal and presentational s' of the subject matter cover of competence in profess of draw moderately appropression of the subject matter cover of the subject matter of the subje	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter covered. -level problem solving, te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous
Course Teaching	D Fail	Demonstrate effective team-based organization of the control of th	s to draw generally apponal and presentational s' of the subject matter cover of competence in profess of draw moderately appropression of the subject matter cover of the subject matter of the subje	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. Lievel problem solving. te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills
Course Teaching	D Fail	Demonstrate effective team-based organization of the control of th	s to draw generally apponal and presentational s of the subject matter covid competence in profess o draw moderately appropriet effective team-based or etention of some relevant thinking, but lacking comfidate and results to drastrate team-based organistrate in profession ineffectively, leading generate ineffectiveness team	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ring. Use lab skills and roneous conclusions to tational skills. ubject matter covered. Level problem solving. te but often erroneous titional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills. No. of Hours
Course Teaching	D Fail Lecture with	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with results to some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention coherent and logical thinking, and minimal detenniques and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems.	s to draw generally apponal and presentational s of the subject matter covid competence in profess o draw moderately appropriet effective team-based or etention of some relevant thinking, but lacking comfidate and results to drastrate team-based organistrate in profession ineffectively, leading generate ineffectiveness team	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter covered. -level problem solving, te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous
Course Teaching	D Fail Lecture with Activities Lectures	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with results to some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention coherent and logical thinking, and minimal detenniques and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems. Demonstrate little or no grasp, with retention of the problems and analysis of data and results conclusions to real-world problems.	s to draw generally apponal and presentational s of the subject matter covid competence in profess o draw moderately appropriet effective team-based or etention of some relevant thinking, but lacking comfidate and results to drastrate team-based organistrate in profession ineffectively, leading generate ineffectiveness team	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter covered. level problem solving. to but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills. No. of Hours 24
Course Teaching	Fail Lecture with Activities Lectures Laboratory	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with right Show some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of coherent and logical thinking, and minimal attechniques and analysis of data and results conclusions to real-world problems. Demonstrate has been been been somewhat the conclusions to real-world problems. Demonstrate has been somewhat the laboratory component course.	s to draw generally apponal and presentational s of the subject matter covid competence in profess o draw moderately appropriet effective team-based or etention of some relevant thinking, but lacking comfidate and results to drastrate team-based organistrate in profession ineffectively, leading generate ineffectiveness team	propriate conclusions to kills. Itered. Show some evidinal-level problem solvoriate but sometimes enganizational and present information, of the supetence in professional nizational and presental propriate but in the subject matter anal-level problem solvinerally to inappropriate	real-world problems. ence of analytical and ring. Use lab skills and roneous conclusions to tational skills. ubject matter covered. elevel problem solving, te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills. No. of Hours
Course Teaching & Learning Activities Assessment Methods	Fail Lecture with Activities Lectures Laboratory Tutorials	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with right Show some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of coherent and logical thinking, and minimal attechniques and analysis of data and results conclusions to real-world problems. Demonstrate has been been been somewhat the conclusions to real-world problems. Demonstrate has been somewhat the laboratory component course.	s to draw generally apponal and presentational s of the subject matter covid competence in profess o draw moderately appropriet effective team-based or etention of some relevant thinking, but lacking comfidate and results to drastrate team-based organistrate in profession ineffectively, leading generate ineffectiveness team	propriate conclusions to kills. Fered. Show some evidicional-level problem solver problem solver problem solver problem solver problem solver problem solver propriate but sometimes enganizational and present professional way sometimes appropriational and presentation, of the subject matter mal-level problem solvinerally to inappropriate based organizational and presental problem solvinerally to inappropriate based organizational and presentations.	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. bject matter coveredlevel problem solving. te but often erroneous titional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills No. of Hours 24 12 100 Weighting in fina
Course Teaching & Learning Activities Assessment Methods	Fail Lecture with Activities Lectures Laboratory Tutorials Reading /	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with results to some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of coherent and logical thinking, and minimal detenniques and analysis of data and results conclusions to real-world problems. Demonstrate haboratory component course	s to draw generally apponal and presentational s of the subject matter covor defective team-based or effective team-based or etention of some relevant thinking, but lacking comparte team-based or effective team-based or etention of some relevant of data and results to draw strate team-based organ of little relevant informatic competence in profession ineffectively, leading genate ineffectiveness team. Details	propriate conclusions to kills. Fered. Show some evidicional-level problem solver problem solver problem solver problem solver problem solver problem solver propriate but sometimes enganizational and present professional way sometimes appropriational and presentation, of the subject matter mal-level problem solvinerally to inappropriate based organizational and presental problem solvinerally to inappropriate based organizational and presentations.	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter coveredlevel problem solving, te but often erroneous tional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills. No. of Hours 24 12 100 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods	D Fail Lecture with Activities Lectures Laboratory Tutorials Reading / Methods	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately Demonstrate partial but limited grasp, with right Show some evidence of coherent and logical Use lab skills and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of coherent and logical thinking, and minimal techniques and analysis of data and results conclusions to real-world problems. Demonstrate haboratory component course Melaboratory component course	s to draw generally apponal and presentational signal and presented the subject matter covered for the subject matter of the subject matter than the subject matter th	propriate conclusions to kills. Fered. Show some evidicional-level problem solver and present information, of the supetence in professional way sometimes approprianizational and present on, of the subject matternal-level problem solvinerally to inappropriate based organizational and	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. ubject matter covered. Level problem solving. te but often erroneous titional skills of limited covered. Show lack of ng. Use lab skills and and usually erroneous nd presentational skills No. of Hours No. of Hours 24 12 100 Weighting in fina course grade (%)
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Fail Lecture with Activities Lectures Laboratory Tutorials Reading / Methods Assignment	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately the problems of the problems of the problems of the problems. Demonstrate partial but limited grasp, with results and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of the problems of the problems of the problems. Demoneffectiveness of the problems of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems. Demonstrate particular problems of the problems. Demonstrate particular problems of the problems of th	s to draw generally apponal and presentational signal and presented the subject matter covered for the subject matter of the subject matter than the subject matter th	propriate conclusions to kills. Fered. Show some evidicional-level problem solver and present information, of the supetence in professional way sometimes approprianizational and present on, of the subject matternal-level problem solvinerally to inappropriate based organizational and	real-world problems. ence of analytical and ring. Use lab skills and roneous conclusions to tational skills. ubject matter covered. I-level problem solving. Iebeut often erroneous tional skills of limited covered. Show lack of rg. Use lab skills and and usually erroneous nd presentational skills. No. of Hours 24
Course Teaching & Learning Activities Assessment Methods	Pail Lecture with Activities Lectures Laboratory Tutorials Reading / Methods Assignment Examination Laboratory Food Micro	Demonstrate effective team-based organization Demonstrate general but incomplete grasp of critical abilities and logical thinking with limite techniques and analysis of data and results to real-world problems. Demonstrate moderately the problems of the problems of the problems of the problems. Demonstrate partial but limited grasp, with results and techniques and analysis of conclusions to real-world problems. Demoneffectiveness. Demonstrate little or no grasp, with retention of the problems of the problems of the problems. Demoneffectiveness of the problems of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems. Demonstrate little or no grasp, with retention of the problems of the problems. Demonstrate particular problems of the problems. Demonstrate particular problems of the problems of th	s to draw generally apponal and presentational s of the subject matter cov do competence in profess o draw moderately appropried fective team-based or getention of some relevant thinking, but lacking commended the strate team-based organ strate team-based organ of little relevant informatic competence in profession ineffectively, leading generate ineffectiveness team. Details	continuous Karl Matthews, Ar	real-world problems. ence of analytical and ving. Use lab skills and roneous conclusions to tational skills. Level problem solving. Use lab skills and and usually erroneous nd presentational skills. No. of Hours 24 12 100 Weighting in final course grade (%) 40 40 20 nerican Society for

BIOL3204 Nutrition and the	BIOL3204 Nutrition and the life cycle (6 credits)		2014
Offering Department	Biological Sciences	Quota	70
Course Co-ordinator	Dr E T S Li, Biological Sciences (etsli@hku.hk)	ů ,	

Teachers Involved	Dr E T S L	i, Biological Sciences				
Course Objectives	roles of e	Nutritional needs vary throughout different stages of the life cycle. This course aims to cover the functional roles of essential nutrients and highlight the nutritional concerns during specific times of growth, development, and aging.				
Course Contents & Topics	key issues	Teaching and learning will take place through an evidence-based approach and will be organized around key issues: vitamin and mineral needs and their metabolism; physiological and psychological determinants that influence nutrient requirements at different stages of the human life cycle; socio-economic factors that influence dietary habit and nutritional status.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Have fundamental knowledge of essential micronutrient metabolism. 2. Be able to critically assess and identify the specific needs at different stages of the life cycle. 3. Relate the concept of requirement to physiological needs. 4. Understand the impact of socio-cultural factors on nutritional status.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry or BIOL3202 Nutritional biochemistry					
Offer in 2014 - 2015	Y 2nd sem Examination May					
Offer in 2015 - 2016	Υ			'		
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough grasp of the subje problem identification and solving. Show ou appropriate conclusions. Demonstrate highl	itstanding ability to critically analyze and inf	erpret scientific data an		
	B Demonstrate substantial grasp of the subject matter covered. Show full ability on knowledge integration, problem identification and solving. Show reasonable ability to critically analyze and interpret scientific data and draw appropriate conclusions. Demonstrate effective team-based organization and presentation skills.					
	C Demonstrate general but incomplete grasp of the subject matter covered. Might show misunderstanding of the materials. Show some ability on knowledge integration, problem identification and solving. Show some ability to analyze and interpret scientific data and draw proper conclusions. Demonstrate adequately effective team-based organization and presentation skills.					
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Misunderstanding of the materials is not uncommon. Show limited ability on knowledge integration, problem identification and solving. Use elementary approaches to analyze and interpret scientific data and draw sometimes erroneous conclusions. Demonstrate team-based organization and presentation skills of limited effectiveness.					
	Fail	Demonstrate little or no grasp, with retentio coherent and logical thinking, and minimal problems. Seriously deficient in ability to a poor organization and presentation skills.	competence in problem solving. Fail to inte	egrate information and i	dentify	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	•	Details	No. of I	Hours	
& Learning Activities	Lectures				36	
	Tutorials		student-centered learning		12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting ir		
	Assignme	ents			30	
	Examinat				70	
Required/recommended reading and online materials	Brown J.E. Nutrition Through the Life Cycle. Thomson, 2011 Edelstein S. & Sharlin J. Life Cycle Nutrition: An Evidence-based Approach. Jones & Bartlett Publishers, 2009 Gropper S.S., Smith J.L & Groff J.L. Advanced Nutrition and Human Metabolism (Wadsworth, 2009) L. Kathleen Mahan & Sylvia Escott-Stump: Krause's Food, Nutrition, & Diet Therapy (Saunders, 2004, 11th edition)			shers,		
Course Website	http://moo	dle.hku.hk/				

BIOL3205 Human physiol	ogy (6 credits)	Academic Year	2014
Offering Department	Biological Sciences Quota 120		
Course Co-ordinator	Dr W Y Lui, Biological Sciences (wylui@hku.hk)		
Teachers Involved	Dr W Y Lui, Biological Sciences Prof F C C Leung, Biological Sciences Prof A O L Wong, Biological Sciences Dr E T S Li, Biological Sciences		
Course Objectives	The course covers major aspects of the physiology of the human boc completing this course, students will have acquired fundamental Students interested in nutrition and human biology will find this course	principles of how	
Course Contents & Topics	Overview of the physiological systems and homeostasis; Neural an system physiology; The digestive system; Cardiac physiology, the bl respiratory system; The urinary system; The skeletal & muscular sys rhythms; Central-peripheral communication in energy homeostasis.	ood vessels and blo	ood pressure; The

Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Comprehend the essence of how the body meets changing conditions while maintaining a relatively constant internal environment. 2. Understand the functions of various body systems. 3. Explain normal body functions through integration of basic physiologic concepts.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Bl	Pass in BIOL2103 Biological sciences laboratory course			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an adva learning outcomes. Show strong analytical and ability to apply knowledge to a wide ra organizational skills.	and critical abilities and log	ical thinking, with evide	nce of original thought,
	B Demonstrate substantial command of a broad range of knowledge required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational skills.				
	C Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational skills.				
	D Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills.				
	Fail	Demonstrate little or no evidence of comm Lack of analytical and critical abilities, logica to solve problems. Organizational skills are	al and coherent thinking. S	how very little or no abi	
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	3	Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Assignme	ents			30
	Examinat	ion			70
Required/recommended reading and online materials	Sherwood Johnson M Siegel G.	n D. U.: Human Physiology: An integra L.: Human Physiology: From Cells to M. D.: Human Biology (Pearson, 2006) J. et al.: Basic Neurochemistry (Acade S.E. & Myers A.K. Netter's Essential F	Systems (Thomson,) emic Press, 2006)	2007)	
reading	Sherwood Johnson M Siegel G.	L.: Human Physiology: From Cells to 1. D.: Human Biology (Pearson, 2006) J. et al.: Basic Neurochemistry (Acade S.E. & Myers A.K. Netter's Essential F	Systems (Thomson,) emic Press, 2006)	2007)	

BIOL3206 Clinical nutrition	ı (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	70
Course Co-ordinator	Dr J M F Wan, Biological Sciences (jmfwan@hku.hk)	'	
Teachers Involved	Dr J M F Wan, Biological Sciences		
Course Objectives	This course aims to provide understanding and insight into dietetics, specifically to: 1. Explain the relationships between diet and disease. 2. Describe the role of diet in the development and preventic diabetes, obesity and anorexia, cardiovascular disease, cancer, 3. Differentiate risk factors that influence dietary choice. 4. Describe the rationales for postoperative nutritional support for	on of common chronic of immune deficiency and r	diseases such a
Course Contents & Topics	The basics of nutrition for health and fitness and medical n development and prevention of chronic diseases such as cance as bulimia nervosa, cardiovascular diseases, renal failure, etc. Medical nutrition therapy for food allergy and food intolerance. N	er, diabetes, obesity and Ialnutrition. Nutrition and	I anorexia as we immune functior
Course Learning Outcomes	On successful completion of this course, students should be able 1. Discuss the different relationships between diet and disease. 2. Describe the role of diet in the development and preven cardiovascular disease, cancer, immune deficiency, and renal fa 3. Clearly differentiate and interpret risk factors that influence die 4. Describe the rationales for postoperative nutritional support fo	ntion of diabetes, obesi ilure. tary choice.	ty and anorexia
Pre-requisites (and Co-requisites and	Pass in BIOL3202 Nutritional biochemistry or BIOL3203 Food m life cycle or BIOL3205 Human physiology	nicrobiology or BIOL3204	Nutrition and th

Impermissible combination)					
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advance course learning outcomes. Thorough grasp thinking, with evidence of original thought, au unfamiliar situations. Apply highly effective laboratory/fieldwork skills and techniques. conclusions. Apply highly effective organization	of the subject. Show strond ability to apply knowled re organizational and procritical use of data and	ng analytical and critic dge to a wide range of esentational skills. A results to draw appr	al abilities and logical complex, familiar and pply highly effective
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Substantial grasp of the subject. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective laboratory /fieldwork skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete comme learning outcomes. General but incomplete abilities and logical thinking, and ability to a organizational and presentational skills. App Mostly correct but some erroneous use of effective organizational and presentational sk	grasp of the subject. Shipply knowledge to most faply moderately effective I data and results to draw	ow evidence of some amiliar situations. Appl aboratory / fieldwork	analytical and critical y moderately effective skills and techniques.
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Partial but limited grasp of the subject, retention of some relevant information of the subject. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab / fieldwork skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of comma outcomes. Little or no grasp of the knowler abilities, logical and coherent thinking. Sho Organization and presentational skills are m laboratory / fieldwork skills and technique conclusions. Organization and presentational	dge and understanding of ow very little or no abilition dinimally effective or ineffects. Misuse of data and	f the subject. Lack of ty to apply knowledg ctive. Apply minimally results and/or unable	analytical and critical e to solve problems. effective or ineffective
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	s	Details		No. of Hours
& Learning Activities	Lectures	-			36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods	S	Details		Weighting in final course grade (%)
	Assignme	ents			20
	Examination				60
	Presentation				
		tion			20
Required/recommended reading and online materials	Presenta Selected r S. Rodwe	tion readings will also be available on the cla ell Williams: Nutrition and Diet Thera n in Health Promotion Wardlaw Gordor	py (7th ed.) Suitor		
reading	Presentar Selected r S. Rodwe Application	readings will also be available on the clar ell Williams: Nutrition and Diet Thera	py (7th ed.) Suitor		

BIOL3201 FOOD and nutriti	onal toxicology (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota 80		
Course Co-ordinator	Dr H S El-Nezami, Biological Sciences (elnezami@hku.hk)			
Teachers Involved	Dr H S El-Nezami, Biological Sciences			
Course Objectives	To introduce students to methods used in assessing the toxic confidence in the handling and interpretation of toxicological basic concepts behind toxicological evaluation, and the criter nondietary exposure to chemicals. Students will understar toxicokinetic studies in toxicological evaluation. This course conducting food toxicological studies.	data. Students will also be ria for setting guidance valued the role of biochemica	introduced to the es for dietary and I, metabolic and	
Course Contents & Topics	Topics include a discussion on exposure and entry route (toxicokinetics), concepts in experimental toxicology, the d substances, target organ effects, the actions and types of common classes of toxic substances is also presented.	lose response relationship,	actions of toxic	
Course Learning Outcomes	On successful completion of this course, students should be a 1. Demonstrate an understanding of the processes involved excretion of toxicants, including an understanding of the toxica 2. Demonstrate an understanding of the various effects induce 3. Demonstrate an understanding of the factors which underlitoxicants. 4. Demonstrate the ability to work in a team to investigate an in human health.	d in absorption, distribution, okinetic behavior of toxicant ed after exposure to toxican e species differences in res	s in mammals. ts. ponse to potentia	

(and Co-requisites and Impermissible combination)	physiolog	BIOC2600 Basic biochemistry or BI	IOL2220 Principles of biochemistry	or BIOL3205 Human		
Offer in 2014 - 2015	Y 2nd	d sem	Examinatio	n May		
Offer in 2015 - 2016	Υ		'			
Course Grade	A+ to F					
Grade Descriptors	A	thinking, with evidence of creative ability skills and techniques and analysis of data	ct matter covered. Show strong analytical an and competence in professional-level proble a and results to draw appropriate and insight um-based organizational and presentational sk	em solving. Critically use lab		
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.					
	С	critical abilities and logical thinking with lim techniques and analysis of data and results	p of the subject matter covered. Show somited competence in professional-level proble s to draw moderately appropriate but sometimely effective team-based organizational and page 1.	m solving. Use lab skills and nes erroneous conclusions to		
	D	Show some evidence of coherent and logic Use lab skills and techniques and analysis	h retention of some relevant information, of cal thinking, but lacking competence in profes s of data and results to draw sometimes app constrate team-based organizational and pro-	ssional-level problem solving. propriate but often erroneous		
	Fail	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking, and minimal competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results ineffectively, leading generally to inappropriate and usually erroneous conclusions to real-world problems. Demonstrate ineffectiveness team-based organizational and presentational skills.				
Course Type	Lecture w	vith laboratory component course				
Course Teaching	Activitie	es				
& Learning Activities	ACTIVITIE		Details	No. of Hours		
& Learning Activities	Lectures		Details	No. of Hours		
& Learning Activities			Details			
& Learning Activities	Lectures	pry	Details	24		
& Learning Activities	Lectures Laborato Tutorials	pry	Details	24 24		
& Learning Activities Assessment Methods and Weighting	Lectures Laborato Tutorials	ory / Self study	Details Details	24 24 12		
Assessment Methods	Lectures Laborato Tutorials Reading	ory / Self study		24 24 12 100 Weighting in final		
Assessment Methods	Lectures Laborato Tutorials Reading Methods	ory / Self study sents	Details seminars & continuous	24 24 12 100 Weighting in final course grade (%)		
Assessment Methods	Lectures Laborato Tutorials Reading Methods Assignm Examina	ory / Self study sents	Details seminars & continuous	24 24 12 100 Weighting in final course grade (%) 40		
Assessment Methods	Lectures Laborato Tutorials Reading Methods Assignm Examina Laborato	ory / Self study s ents	Details seminars & continuous assessment	24 24 12 100 Weighting in final course grade (%) 40		
Assessment Methods and Weighting Required/recommended reading	Lectures Laborato Tutorials Reading Methods Assignm Examina Laborato S. S. Des	y / Self study	Details seminars & continuous assessment	24 24 12 100 Weighting in final course grade (%) 40		

BIOL3208 Food safety and	d quality management (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	40
Course Co-ordinator	Prof H Corke, Biological Sciences (harold@hku.hk)	'	
Teachers Involved	Prof H Corke, Biological Sciences		
Course Objectives	To provide exposure to some key management concepts that will succeed in the marketplace. To introduce stude business situations in food safety management.		
Course Contents & Topics	- The regulatory, social and business imperative for food sate Basic concepts in TQM - Statistical Process Control - Quality Function Deployment - Quality Function Deployment - Quality management standards (ISO 9000) - Development and implementation of a Hazard Analysis ISO 22000 food safety management system/ supply chain Role of environmental management systems (ISO 14000) - Intellectual Property issues in the food industry - Religious, ethical, and cultural food choices - Illustrative business case studies on food safety manager	Critical Control Point (HACCI approach)) in the food industry	²) plan (within a
Course Learning Outcomes	On successful completion of this course, students should be 1. Understand the historical development of government re 2. Be familiar with a set of management techniques applica 3. Be able to analyze food production problems and make and safety.	egulation of food safety. able in the food industry.	to improve qualit
Pre-requisites	Pass in BIOL3201 Food chemistry or BIOL3203 Food micro		

Impermissible combination)					
Offer in 2014 - 2015	Y 1st	sem	Exam	nination	Dec
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use quality management skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective team-based organizational and presentational skills.				
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use quality management skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.				
	С	Demonstrate general but incomplete grasp o critical abilities and logical thinking with lim management skills and techniques and analy erroneous conclusions to real-world problem presentational skills.	ited competence in professional sis of data and results to draw m	I-level problem noderately appro	solving. Use quality opriate but sometimes
	D	Demonstrate partial but limited grasp, with re Show some evidence of coherent and logical Use quality management skills and technique often erroneous conclusions to real-world pu skills of limited effectiveness.	thinking, but lacking competence s and analysis of data and results	in professional- is to draw some	level problem solving.
	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking, and minimal competence in professional-level problem solving. Use quality management skills and techniques and analysis of data and results ineffectively, leading generally to inappropriate and usually erroneous conclusions to real-world problems. Demonstrate ineffectiveness team-based organizational and presentational skills.				
Course Type	Lecture-ba	ased course			
Course Teaching					
	Activitie	s	Details		No. of Hours
& Learning Activities	Activitie	s	Details		No. of Hours
		s	Details including presentation		
	Lectures				36
	Lectures Tutorials Group we				36 12
	Lectures Tutorials Group we	ork / Self study			36 12 30
& Learning Activities Assessment Methods	Lectures Tutorials Group we Reading	ork / Self study	including presentation		36 12 30 100 Weighting in final
& Learning Activities Assessment Methods	Lectures Tutorials Group we Reading Methods	ork / Self study	including presentation		36 12 30 100 Weighting in final course grade (%)
& Learning Activities Assessment Methods	Lectures Tutorials Group we Reading Methods Assignment	ork / Self study ents	including presentation		36 12 30 100 Weighting in final course grade (%)
& Learning Activities Assessment Methods and Weighting Required/recommended reading	Lectures Tutorials Group we Reading Methods Assignme Examina Project re Jones, J.	ents tion eports M.: Food Safety (Eagan Press, 1992)	including presentation Details including presentation		36 12 30 100 Weighting in final course grade (%) 10 60 30
& Learning Activities Assessment Methods and Weighting	Lectures Tutorials Group we Reading Methods Assignme Examina Project re Jones, J.	ork / Self study sents tion eports	including presentation Details including presentation		36 12 30 100 Weighting in final course grade (%) 10 60 30
& Learning Activities Assessment Methods and Weighting Required/recommended reading	Lectures Tutorials Group we Reading Methods Assignme Examina Project re Jones, J. Mortimore	ents tion eports M.: Food Safety (Eagan Press, 1992)	including presentation Details including presentation al Approach (Chapman and	d Hall, 1994	36 12 30 100 Weighting in final course grade (%) 10 60 30
& Learning Activities Assessment Methods and Weighting Required/recommended reading	Lectures Tutorials Group we Reading Methods Assignme Examina Project re Jones, J. Mortimore Forsythe,	ents tion eports M.: Food Safety (Eagan Press, 1992) e, S. and Wallace, C.: HACCP: A Practic	including presentation Details including presentation al Approach (Chapman and	d Hall, 1994	36 12 30 100 Weighting in final course grade (%) 10 60 30

BIOL3209 Food and nutrie	nt analysis (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	70
Course Co-ordinator	Dr M F Wang, Biological Sciences (mfwang@hku.hk)		
Teachers Involved	Dr M F Wang, Biological Sciences Dr J C Y Lee, Biological Sciences		
Course Objectives	To introduce basic principles and provide practical training in food an to understand the principles behind analytical instruments used in analyze major and minor food components as well as some food adult	food analysis. To t	
Course Contents & Topics	The key concepts in professional food analysis in an industry context techniques for macronutrients (e.g. protein, carbohydrate and fats), mand adulterants in food will be covered. A variety of classical and in analysis will be discussed: rheology and texture measurement, the chromatography and electrophoresis.	nicronutrients (vitami nstrumental techniqu	ns and minerals) ues used in food
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the basic principles of food and nutrient analysis. 2. Be familiar with a variety of classical and instrumental analytical ted. 3. Understand the principles behind analytical instruments associated. 4. Be able apply their knowledge and laboratory skills in novel situ macronutrient and micronutrient of food products. 5. Be able to select and justify an appropriate analytical technique problems.	with food. lations to measure	·
Pre-requisites (and Co-requisites and	Pass in BIOL3201 Food chemistry		

Offer in 2014 - 2015	Y 1s	t sem	Examinatio	n Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use lab skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective team-based organizational and presentational skills.					
	Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.					
	С	critical abilities and logical thinking with li techniques and analysis of data and resu	asp of the subject matter covered. Show some imited competence in professional-level proble lits to draw moderately appropriate but sometimately effective team-based organizational and p	m solving. Use lab skills and nes erroneous conclusions to		
	D					
	Fail	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking, and minimal competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results ineffectively, leading generally to inappropriate and usually erroneous conclusions to real-world problems. Demonstrate ineffectiveness team-based organizational and presentational skills.				
	_					
Course Type	Lecture v	vith laboratory component course				
Course Teaching	Activitie	, .	Details	No. of Hours		
Course Teaching		es	Details	No. of Hours		
	Activitie	es S	Details			
Course Teaching	Activitie	es S Dory	Details	24		
	Activities Lectures Laborate Tutorials	es S Dory	Details	24 24		
Course Teaching	Activities Lectures Laborate Tutorials	es Sorry Sorry Solf Study	Details Details	24 24 6		
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Laborate Tutorials Reading	es s pory s / Self study		24 24 6 100 Weighting in final		
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Laborato Tutorials Reading	ess S S S S S S S S S S S S S S S S S S	Details	24 24 6 100 Weighting in final course grade (%)		
Course Teaching & Learning Activities Assessment Methods	Activitie Lectures Laborate Tutorials Reading Methods Assignm Examina Y. Pome ed.)	ess Sory Sory Sory Sory Sory Sory Sory Sory	Details	24 24 6 100 Weighting in final course grade (%) 40 60 nd Reinhold, 1994, 3rd		
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading	Activities Lectures Laborato Tutorials Reading Methods Assignm Examina Y. Pome ed.) S. S. Nie	ess Sory Sory Sory Sory Sory Sory Sory Sory	Details practical work & assignment sis: Theory and Practice (Van Nostra	24 24 6 100 Weighting in final course grade (%) 40 60 nd Reinhold, 1994, 3rd		

BIOL3210 Grain production	n and utilization (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	40
Course Co-ordinator	Prof H Corke, Biological Sciences (harold@hku.hk)		
Teachers Involved	Prof H Corke, Biological Sciences		
Course Objectives	To provide a broad understanding of the utilization and signand in human health and nutrition.	nificance of the major grains in	n the food indust
Course Contents & Topics	- Global grain production and consumption - The Green Revolution and its aftermath - International grain trade - Wheat: flour milling, dough rheology, the baking process, - Wheat: quality of Asian products including steamed bread - Wheat: small-scale tests for quality - Rice: nutritional quality, consumer preferences, milling, qu - Maize: products of wet milling, animal feed development - Biofuels focusing on bioethanol - Illustrative business case studies on the grain processing	and noodles ality, quality testing, products	
Course Learning Outcomes	On successful completion of this course, students should be 1. Understand the major production, import, and export patt 2. Understand the technology behind the production of grain 3. Understand the scope and nature of professional level que 4. Appreciate the constraints to global food sufficiency. 5. Appreciate the ethical issues behind the diversion of grain the d	erns that support the global un- h-based foods. Juality testing for grain product	s.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in any level 2 BIOL course		
Offer in 2014 - 2015	Y 1st sem	Examination	Dec
Offer in 2015 - 2016	Υ		

Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use lab skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective team-based organizational and presentational skills.			
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.				
	С	C Demonstrate general but incomplete grasp of the subject matter covered. Show some evidence of analytical and critical abilities and logical thinking with limited competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw moderately appropriate but sometimes erroneous conclusions to real-world problems. Demonstrate moderately effective team-based organizational and presentational skills.			
	D	Demonstrate partial but limited grasp, with Show some evidence of coherent and logica Use lab skills and techniques and analysis conclusions to real-world problems. Demoi effectiveness.	Il thinking, but lacking competence in proof data and results to draw sometimes	ofessional-level problem solving. appropriate but often erroneous	
	Fail	Demonstrate little or no grasp, with retention coherent and logical thinking, and minimal techniques and analysis of data and results conclusions to real-world problems. Demons	competence in professional-level prob ineffectively, leading generally to inap	lem solving. Use lab skills and propriate and usually erroneous	
Course Type	Lecture-ba	sed course			
Course Teaching & Learning Activities	Activities	·	Details	No. of Hours	
a Learning Activities	Lectures			36	
	Tutorials			12	
	Reading /	Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Examinati	on		70	
	Project re	ports	including presentation	30	
Required/recommended reading and online materials	pages. Els	dia of Grain Science, edited by Wrigle evier, Oxford. (selected chapters only lings to be provided		E (2004) 3 Volumes, 1,700	
Course Website	http://mood	dle.hku.hk/			
Additional Course Information	Th:	e will be offered subject to a minimum		:::t 	

BIOL3211 Nutrigenomics (6 credits)	Academic Year	2014			
Offering Department	Biological Sciences	Quota	40			
Course Co-ordinator	Dr K C Tan-Un, Biological Sciences (kctanun@hku.hk)					
Teachers Involved	Dr K C Tan-Un, Biological Sciences					
Course Objectives	Recent advances in the understanding of the human genome have resulted in the emergence of a new science called Nutrigenomics. This course aims to provide students with an understanding of the biochemical mechanisms underpinning the science of nutrition and the relation between genes and die related diseases. It explains the role of nutrition at the molecular level and the concepts of nutrigenomics and nutrigenetics.					
Course Contents & Topics	Concepts of nutrigenomics, nutrigenetics, metabolomics and nutritic Regulation of gene expression; Single Nucleotide Polymorphisms at Overview of lipid metabolism; cholesterol metabolic pathway; hyper Relevance of folate, vitamin B12; hyperhomocysteinemia and gene Epigenetics, Barker s hypothesis, influence of maternal nutrition in predisposition, candidate genes like leptin, FTO and other hormone Polyunsaturated fatty acid and their roles in the control of gene exoxidation pathways; Inborn errors of metabolism in the context of genetic mutations and	nd relation to disease lipidaemia, LDL recept polymorphisms in disease fetal gene expression s involved in the cont pression example lipi	otor mutations. seases. n. Obesity, genetion rol of appetite ogenesis and lipio			
Course Learning Outcomes	On successful completion of this course, students should be able to 1. Explain the principles of the control of gene expression. 2. Demonstrate understanding of the role of metabolic pathways and disease. 3. Discuss how genetic variations are used to study the role of gene 4. Explain the relationship between genotype, epigenetics and diet-5. Critically evaluate current theories of personalized nutrition based	n relationship to diet es in nutrient-related or related diseases.	ellular processes			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOC2600 Basic biochemistry or BIOL2220 Principles of bi	ochemistry				
Offer in 2014 - 2015	Y 2nd sem	Examination	May			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject matter covered. Show problem solving skills. Show excellent ability to critically analyze					

		appropriate conclusions. Demonstrate high	y effective organization and writing skills.			
	В	Demonstrate substantial grasp of the subje problem solving skills. Show substantial ab conclusions. Demonstrate effective organiz	ility to critically analyze and interpret scient			
	С	C Demonstrate general and acceptable grasp of the subject matter covered. Show acceptable ability of knowledge integration and problem solving skills. Show moderate ability to analyze and interpret scientific data and draw proper conclusions. Demonstrate moderate organization and writing skills.				
	D	Demonstrate marginal grasp of the subject matter covered. Show limited ability on knowledge integration and problem solving skills. Show limited ability to analyse and interpret scientific data. Demonstrate basic organization and writing skills.				
	Fail Demonstrate little or no grasp, with little retention of information of the subject matte and logical thinking, and minimal evidence in problem solving. Fail to integrate in Show little or minimal ability to analyze and interpret scientific data and draw organization and writing skills.					
Course Type	Lecture-based course					
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials		student-centered learning	12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments			20		
	Examination			60		
	Test			20		
Required/recommended reading and online materials	Lehninger Principles of Biochemistry Ordovas: Nutrigenetics and Nutrigenomics. Wiley. 2004 Brigelius-Flohe, Joost: Nutritional Genomics. Wiley. 2006. Rimbach, Fuchs, Packer: Nutrigenomics, CRC Press. 2005 Journals in Nutrition, Molecular Biology and Genetics					
Course Website	http://moo	http://moodle.hku.hk/				
Additional Course Information	This cours	This course will be offered subject to a minimum enrollment number and availability of teachers.				

BIOL3301 Marine biology	(6 credits)		Academic Year	2014	
Offering Department	Biologica	l Sciences	Quota	40	
Course Co-ordinator	Dr M Yas	suhara, Biological Sciences (yasuhara@hku.hk)			
Teachers Involved	Prof Y Sa Prof R S	suhara, Biological Sciences adovy, Biological Sciences S Wu, Biological Sciences gatesen, Biological Sciences			
Course Objectives	To develop a basic understanding and appreciation of the field of marine biology, including the fascinatin diversity of marine life, their function, ecology and inter-relationships. Contemporary issues including the benefits we derive from marine biological resources and threats to their long-term sustainability will also be discussed with case studies highlighting key issues.				
Course Contents & Topics	1. The ph temperate 2. Import mammals 3. Major mangrove 4. Exploit	The topics cover: 1. The physical and chemical environments (e.g., light, current, atmospheric -ocean interactions, salinit temperature, pH, dissolved oxygen, nutrients) and how these may affect the marine biota 2. Important groups of marine organisms (e.g., phytoplankton, zooplankton, benthos, nekton, marin mammals) and marine food web 3. Major marine habitats and ecosystems (e.g., intertidal, benthic, pelagic, deep sea, coral reefs mangroves) 4. Exploitation of marine biological resources (e.g., fisheries and bioactive compounds) 5. Contemporary issues (e.g. climate change, marine pollution, sustainable use of marine living resources)			
Course Learning Outcomes	1. Demor 2. Recogn 3. Apprec	On successful completion of this course, students should be able to: 1. Demonstrate a basic understanding of the diversity and function of marine biota. 2. Recognize the interactions of marine biota and their environments. 3. Appreciate the importance of marine ecosystems and the threats of human activities on their long-te sustainability as well as possible solutions.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	SIOL2306 Ecology and evolution or ENVS2002 E	nvironmental data analysis		
Offer in 2014 - 2015	Y 2n	d sem	Examination	May	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	Α	Demonstrate thorough mastery at an advanced level of course learning outcomes. Show strong analytical and of thought, and ability to apply knowledge to a wide range			

	В	the course learning outcomes. Show evid	road range of knowledge and skills required for dence of analytical and critical abilities and logic amiliar situations. Apply effective organizational a	cal thinking, and ability to	
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture with laboratory component course				
Course Teaching & Learning Activities	Activities	S	Details	No. of Hours	
& Learning Activities	Lectures			24	
	Field work		field trip, laboratory practical & tutorials	30	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments			20	
	Examinat	tion		80	
Required/recommended reading and online materials	Levinton, J. S. 2001. Marine Biology; function, biodiversity, ecology 2nd edition. 515 pp. Oxford Universes Nybakken, J.W. and Bertness, M.D., 2004. Marine Biology: An Ecological Approach, 6th Edit Benjamin Cummings. H. V. Thurman and E. A. Burton: Introductory Oceanography (Prentice Hall, 2001, 9th ed.) J. W. Nybakken: Marine Biology: An Ecological View (Benjamin Cummings, 2000) TBC			proach, 6th Edition,	
Course Website	http://www.biosch.hku.hk/ecology/lsc/				

BIOL3302 Systematics an	d phylogen	etics (6 credits)	Academic Year	2014		
Offering Department	Biological	Sciences	Quota	60		
Course Co-ordinator	Prof R M K Saunders, Biological Sciences (saunders@hku.hk)					
Teachers Involved	Prof R M P	Saunders, Biological Sciences				
Course Objectives	To give students an understanding of the principles of systematics and phylogenetics and an appreciatio of current trends and controversies. Systematics forms an invaluable grounding for many fields of biolog (including anatomy, ecology, population biology and evolutionary biology), and enables the integration of wide range of techniques (including anatomy, biochemistry, chemistry, molecular biology, cytology palaeontology and ethology).					
Course Contents & Topics	cladistics anatomy, complexity nomenclat	Currrent classificatory theories: phenetic systematics (classifications based on overall resemblances) and cladistics (evolutionary reconstruction). The species concept. Sources of taxonomic data: morphology & anatomy, biochemistry, chemistry, molecular biology, cytology, and ethology. Causes of taxonomies complexity: environmental factors; hybridization; breeding systems. Principles of nomenclature. Laboratory sessions will be aimed at illustrating taxonomic procedures and problems students will not be expected to memorize large numbers of scientific names.				
Course Learning Outcomes	Explain methods of 2. Describ sister-groum 3. Evaluate 4. Recogn 5. Unders	asful completion of this course, students should be ab taxon concepts (with particular reference to spec can be applied below the species level. be the principles behind maximum parsimony method up relationships, out-group comparison, homoplasy are the diversity of sources of taxonomic data, and explained the main causes of taxonomic complexity, and idea tand the principles of nomenclature in order to interest validly publish new names.	les) and show how mult ls of phylogenetic recons and the assessment of clad ain the importance of spe entify appropriate solutions	truction (includin le stability). cific data source: s.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	OL1309 Evolutionary diversity and any level 2 BIOL of	course			
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining most or all of the course learning outcomes, with evidence of extensive background reading and use of named examples. Show evidence of significant critical abilities and logical thinking. Apply highly effective presentation skills. Demonstrate effective use of data and results to draw appropriate and insightful conclusions. Show evidence of integration of a wide range of appropriate theories, principles, evidence and techniques.					
	B Demonstrate substantial command of knowledge required for attaining most of the course learning outcomes, with evidence of some background reading and use of named examples. Show evidence of critical abilities and logical thinking. Apply effective presentation skills. Demonstrate use of data and results to draw appropriate and insightful conclusions. Show evidence of general integration of appropriate theories, principles, evidence and techniques.					

	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes, with evidence of limited background reading and use of named examples. Show evidence of some critical abilities and logical thinking. Apply moderately effective presentation skills. Demonstrate mostly correct use of data and results to draw appropriate and insightful conclusions. Show evidence of partial integration of appropriate theories, principles, evidence and techniques.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes, with insufficient evidence of background reading and use of named examples. Show evidence of limited critical abilities and logical thinking. Apply limited presentation skills. Demonstrate limited ability to use data and results to draw appropriate and insightful conclusions. Show evidence of limited integration of appropriate theories, principles, evidence and techniques.			
	Fail	Demonstrate little or no evidence of comoutcomes, with no evidence of backgroun abilities and logical thinking. Presentation draw appropriate conclusions. Little or no techniques.	d reading or use of named exampl al skills are minimally effective or in	les. Show little or no evidence of critical neffective. Misuse of data and results to	
Course Type	Lecture w	Lecture with laboratory component course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laboratory			24	
	Project work			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments			15	
	Examination			70	
	Laboratory reports			15	
Required/recommended reading and online materials	E. Mayr & P. D. Ashlock: Principles of Systematic Zoology (McGraw-Hill, 1991, 2nd ed.) W. S. Judd et al.: Plant Systematics - A Phylogenetic Approach (Sinauer, 1999) TBC				
Course Website	http://www	http://www.biosch.hku.hk/ecology/lsc/			

BIOL3303 Conservation ec	ology (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences Quota 40				
Course Co-ordinator	Dr T C Bonebrake, Biological Sciences (tbone@hku.hk)				
Teachers Involved	Dr T C Bonebrake, Biological Sciences Prof Y Sadovy, Biological Sciences Dr T Vengatesen, Biological Sciences Dr L Karczmarski and TBC, Biological Sciences				
Course Objectives	To introduce students to the theory and practice of conservation and to provide students with a thorough understanding of practical, economic and management skills required for proficiency in conservation biology. Our ultimate aim is to promote an understanding of the natural biodiversity, the threats to it, and the best ways to manage them. We hope these will be your aims too, and that you will be able to use the skills and knowledge you learn from the course to reduce the local, regional and global loss of biodiversity.				
Course Contents & Topics	Among the many environmental issues, the most serious is the increasingly rapid loss of biodiversity. This loss is irreversible on a human timescale and will reduce the options available to all future human generations. Conservation Biology/Ecology is the science of preserving biological diversity. This course also provides insights to the many benefits and services that nature offers and explores strategies for management options to sustain ecological integrity and production. It is an inexact, applied, missior orientated, multidisciplinary science which, like medicine, has built-in values: to a conservation biologist, as to a doctor, it matters whether the patient lives or dies. It is also a very new science, bringing together elements from ecology, environmental science, forestry, resource management and many other fields. The course is designed to provide the knowledge, theories, and research related to biodiversity conservation. Our teaching focuses on biodiversity conservation, conservation issues associated with climate change, the key theoretical underpinning of biodiversity conservation and an introduction to conservation legislation and economics. We emphasis on the integration of knowledge, skills and abilities that are required to practice conservation. Our problem based learning approach will require students to				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Develop a framework for critical thinking about biodiversity, environ 2. Understand why species are becoming extinct and predict which or 3. Understand the importance of the threat of tropical deforestation, habitat fragmentation in species extinction, and explain the main foloss. 4. Understand the principles of population viability analysis, the bemanagement and the role of ex situ conservation, ecological restorations. Outline the legal and administrative basis for conservation in Hong 6. Appreciate the roles and relationships of economic, social aconservation of biodiversity.	nes will be most vuln marine and coastal rces behind habitat asis of single-spec on and reintroduction Kong and the world.	erable. degradation, and and biodiversity des conservation in conservation.		
Pre-requisites (and Co-requisites and	Pass in BIOL2306 Ecology and evolution				

Offer in 2014 - 2015	Y 2n	d sem	Exar	nination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, ability to integrate and synthesize information, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective presentational skills. Strong evidence of clear attention to thoughtful and reflective thinking.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, integration of materials and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate effective presentational skills. Evidence of clear attention to thoughtful and reflective thinking				
	С	Demonstrate general but incomplete com learning outcomes. Show evidence of som knowledge to most familiar situations. Aç attention to thoughtful and reflective thinkin	e analytical and critical abilities and oply moderately effective presentate	d logical thinkin	g, and ability to apply	
	D	Demonstrate partial but limited command of outcomes. Show evidence of some cohere little attempt at integration. Show limited at presentational skills. Lack of attention to the	nt and logical thinking, but with limit oility to apply knowledge to solve pro	ted analytical a	nd critical abilities and	
	Fail	Demonstrate little or no evidence of comr outcomes. Lack of analytical and critical ab knowledge to solve problems. Organization	nand of knowledge and skills requi	Show very little	e or no ability to apply	
Course Type	Lecture with laboratory component course					
Course Teaching	Activitie	9S	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Field work				10	
	Group work				8	
	Tutorials				14	
	Reading / Self study				100	
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)	
	Assignm	nents			20	
	Examina	ation			60	
	Presentation		group presentation		10	
	Test				10	
Required/recommended reading and online materials	R. B. Primack: Essentials of Conservation Biology (Sinauer, 2006, 4th ed.) V. D. Fred: Conservation biology [electronic resource]: foundations, concepts, applications (Springe 2008) M.L. Hunter and J.P. Gibbs: Fundamentals of Conservation Biology (Blackwell, 2007, 3rd Ed) William J. Sutherland: The Conservation Handbook: Research, Management and Policy (Blackwell, 2008) NIL			d Ed)		
	http://www.biosch.hku.hk/ecology/lsc/					

BIOL3313 Freshwater eco	logy (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota	30		
Course Co-ordinator	Prof D Dudgeon, Biological Sciences (ddudgeon@hku.hk)				
Teachers Involved	Prof D Dudgeon, Biological Sciences				
Course Objectives	This course introduces freshwater science by integrating the physical and biological components of river and their drainage basins in the context of sustaining human livelihoods and biodiversity. Conservation and management of lakes and maintenance of water quality are considered also. Case studies are used illustrate the principles of river science and human use of drainage basins. Emphasis will be placed upon conservation of freshwater biodiversity in Asia in the context of increasing human modification of ecosystems, habitat degradation and water scarcity.				
Course Contents & Topics	ecosystems, habitat degradation and water scarcity. The amount of water on Earth is fixed. Less than 0.01% of the world's water is in lakes and rivers, yet this water hosts 10% of the Earth's species. Global water use has increased 300% since 1950 and is growing faster than the Earth's population; many people in Asia already face water stress. This course introduces the physicochemical processes involved in the hydrological cycle and flow of water in drainage basins, as well as their seasonal fluctuations, and describes the main longitudinal changes that occur along rivers and their floodplains. Energy flows in freshwater ecosystems are described with particular reference to the transfer of materials between water and land and the relative importance of aquatic primary production versus energy derived from detrital inputs from the land. The range of organisms associated with Asiar fresh waters is introduced and their functional roles explained, and students will become familiar with some common Hong Kong species in field trips and laboratory sessions. The dependence of humans or freshwater ecosystems and the role they play in sustaining livelihoods is explained, together with the causes and consequences of human modification of fresh waters, and the implications for conservation of aquatic biodiversity. Finally the range of management strategies used to reduce or mitigate human impact on freshwater ecosystems and maintain water quality is introduced.				
Course Learning Outcomes	On successful completion of this course, students should be a	ble to:			

	influence of 2. Describ ecosystem 3. Describ freshwater	e the global water cycle, the main soft land-water interactions on aquatic position of the freshwater is, and identify some of the common are the results of modification of frest biodiversity in Asia, explain why freshement strategies used to reduce or missing the main strategies used to reduce or missing the missing the main strategies used to reduce or missing the main strategies used to reduce or missing the missing the main strategies used to reduce or missing the missing the main strategies used to reduce or missing t	roductivity. biota (major groups) and nimals that occur in Hong hwater ecosystems by hi water biota are vulnerable	their functional Kong fresh wat umans, list the	I roles in aquatic ters. main threats to	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Blo	ass in BIOL2102 Biostatistics and BIOL2306 Ecology and evolution				
Offer in 2014 - 2015	Y 1st	sem	Ex	camination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F	+ to F				
Grade Descriptors	A	A Evidence of original logical (or coherent) thought, strong analytical (or critical) abilities and a thorough grassubject as demonstrated by background reading and excellent use of named (organism) examples. Show presentational, analytical skills and/or lab/field skills, and substantial knowledge of general freshwater biodivelected taxa. Excellent or outstanding (for A+) work relative to what is required at degree level.				
	В	Evidence of analytical (or critical) abilities an grasp of the subject as demonstrated by ba presentational, analytical and/or lab/field ski Work more than sufficient for what is required	ckground reading and use of na lls, and knowledge of general f	amed (organism) ex	camples. Show good	
	С	Evidence of some analytical (or critical) abilities and logical (or coherert) thinking with an adequate (but incomplete) grasp of the subject, but little or no evidence of original thinking, with limited background reading and use of named (organism) examples. Show fair presentational, analytical and/or lab/field skills, and some knowledge of general freshwater biodiversity or selected taxa. Work sufficient for what is required for degree level.				
	D Evidence of retention of a minimum of relevant information of the subject (i.e. knowledge is very incomplete), with limited organizational, analytical or presentational skills. Shows insufficient evidence of background reading, or familiarity with lab/field techniques or freshwater biodiversity. Work merely (for D+) or barely (D) adequate for what is required at degree level.					
	Fail	Fail Evidence of poor or inadequate knowledge and understanding of the subject, and a lack of coherence, organization and/or excessive irrelevancy. Little or no evidence of familiarity with relevant reading material lab/field techniques, or any knowledge of freshwater biodiversity. Work fails to reach degree level.				
Course Type	Lecture wi	th laboratory component course				
Course Teaching	Activities Details		Details		No. of Hours	
& Learning Activities	Lectures				26	
	Laboratory		project and laboratory trips to local stream wetlands		40	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		/eighting in final ourse grade (%)	
	Assignme	ents			30	
	Examinat	ion			60	
	Laboratory reports				10	
Required/recommended reading and online materials	The Mekor An online information river health	Allan, J.D. & Castillo, M.M. (2007). Stream Ecology. Springer. The Mekong River Awareness Kit (RAK) http://www.mrcmekong.org/RAK/html/rak_frameset.html An online training tool developed by an international team (including the course coordinator) that contains information on the physical and biological features of rivers, and shows how human livelihoods depend on iver health. A list of references available in HKU library will be provided for each lecture on the course website.				
Course Website		.biosch.hku.hk/ecology/lsc/				
Additional Course Information			enrollment number and a	vailability of tea	chers.	
		This course will be offered subject to a minimum enrollment number and availability of teachers.				

BIOL3314 Plant structure	and evolution (6 credits)	Academic Year	2014			
Offering Department	Biological Sciences Quota 30					
Course Co-ordinator	Prof R M K Saunders, Biological Sciences (saunders@hku.hk)					
Teachers Involved	Prof R M K Saunders, Biological Sciences					
Course Objectives	To survey the form and function of the vascular plant body, with particular emphasis on the evolutionary significance of structures. This course forms a basis for understanding plant physiology, ecology, systematics and phylogenetics.					
Course Contents & Topics	The course will investigate various cell, tissue and organ types in the vascular plant body, with functional explanations for their diversity and discussions of the value of such knowledge in understanding plant phylogeny. Information on plant structure will be integrated with our current understanding of developmental genetics and taxonomic relationships derived from molecular phylogenetic research. Topics such as food storage, strength, water conduction, growth and development, pollination, fertilization, fruit and seed dispersal, germination, etc., will be discussed.					
Course Learning Outcomes	On successful completion of this course, students should be able	to:				
	010					

	(such as the 2. Describe 3. Describe 4. Integrate 5. Describe derived fro 6. Explain	ise the main plant cell types and explaine xylem and phloem). e the developmental changes that occupe the structure, function and developme the knowledge of the genetic control of fice the structure of fruits from a function of the the structure of fruits from a function of the flower. how seeds develop after fertilization of germination patterns.	or in primary tissues with the onset of ent of secondary vegetative structury oral development with the evolution nal perspective, and recognise how	of secondary growth. es (wood and bark). of organ diversity. v these structures are	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	Pass in BIOL1309 Evolutionary diversity and any level 2 BIOL course			
Offer in 2014 - 2015	Y 2nd	sem	Examination	May	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advance course learning outcomes, with evidence of evidence of significant critical abilities and lo effective use of data and results to draw appro-	extensive background reading and use or gical thinking. Apply highly effective prese priate and insightful conclusions.	f named examples. Show ntation skills. Demonstrate	
	В	Demonstrate substantial command of knowledge required for attaining most of the course learning outcomes, with evidence of some background reading and use of named examples. Show evidence of critical abilities and logical thinking. Apply effective presentation skills. Demonstrate use of data and results to draw appropriate and insightful conclusions.			
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes, with evidence of limited background reading and use of named examples. Show evidence of some critical abilities and logical thinking. Apply moderately effective presentation skills. Demonstrate mostly correct use of data and results to draw appropriate and insightful conclusions.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes, with insufficient evidence of background reading and use of named examples. Show evidence of limited critical abilities and logical thinking. Apply limited presentation skills. Demonstrate limited ability to use data and results to draw appropriate and insightful conclusions.			
	Fail	Demonstrate little or no evidence of commar outcomes, with no evidence of background re abilities and logical thinking. Presentational st draw appropriate conclusions.	ading or use of named examples. Show litt	le or no evidence of critical	
Course Type	Lecture wit	th laboratory component course			
Course Teaching	Activities	i	Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laboratory			36	
	Reading /	Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Examinati	ion		70	
	Laborator	y reports		30	
Required/recommended reading and online materials	P.H. Ravei	P. Rudall: Anatomy of Flowering Plants, 3rd ed. Cambridge Univ. Press (2007) P.H. Raven, R.F. Evert & S.E. Eichhorn: Biology of Plants, 7th ed. Freeman (2005) A list of additional reading material will be provided during the course.			
Course Website	http://www	.biosch.hku.hk/ecology/lsc/			
Additional Course Information	This cours	e will be offered subject to a minimum e	enrollment number and availability	of teachers.	

BIOL3318 Experimental in	BIOL3318 Experimental intertidal ecology (6 credits)					
Offering Department	Biological Sciences Quota 20					
Course Co-ordinator	Prof G A Williams, Biological Sciences (hrsbwga@hku.hk)	Prof G A Williams, Biological Sciences (hrsbwga@hku.hk)				
Teachers Involved	Prof G A Williams, Biological Sciences					
Course Objectives	To examine the communities of coastal systems: their distribution, composition and the factors which regulate them. This course will examine, using an experimental approach, patterns exhibited by a range of shores and the deterministic and stochastic processes that create and sustain them. Hong Kong shores will be used as examples but comparisons will be drawn from the coastlines of the world.					
Course Contents & Topics	The first part of this course describes shores of the marine to brackish water continuum and the communities found on them. Lectures will cover the physical environment of the intertidal (e.g. tides; waves; geological and hydrological processes) the resultant variations in exposure and shore types and consequent distribution of animals and algae on these shores (vertical and horizontal zonation patterns) with specific Hong Kong examples. The second part of the course uses an experimental approach (e.g. sampling methodology; manipulative techniques; experimental design and data analysis) to investigate the factors (e.g. predation; herbivory; competition; disturbance; succession; patchiness and recruitment; supply side ecology) that structure these shores, with particular focus on rocky intertidal shores.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe the physical environmental factors (e.g., waves, tides) shaping the intertidal environment and how they interact with geographic features to produce different kinds of shores (e.g., sandy shores, mangroves).					
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	 Understand the factors limiting species distribution patterns on the vertical intertidal gradien appreciate methods to measure and investigate these patterns. Identify and quantify the distribution of a variety of local species on different Hong Kong shores. Review, critique and design experimental studies to investigate patterns (e.g., zonation) and proceeding. Explain the role of biological processes (e.g., predation, succession) and their interaction with physical environment in shaping intertidal communities. Plan, design, execute, analyse and present a simple experimental study on intertidal ecology. 				g shores. n) and processes eraction with the	
Pre-requisites (and Co-requisites and mpermissible combination)	Pass in B	ass in BIOL2102 Biostatistics or BIOL3301 Marine biology				
Offer in 2014 - 2015	Y 2nd	sem	Exar	mination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Evidence of original, logical (or coherent) thought, strong analytical and critical abilities and a thorough grasubject as demonstrated by background reading and excellent use of named (organism) examples. Show presentational, analytical skills and/or lab/field skills, and demonstrate substantial knowledge of general ecology and excellent experimental design and analysis skills. B Evidence of analytical (or critical) abilities and logical (or coherent), but not necessarily original, thinking grasp of the subject as demonstrated by background reading and use of named (organism) examples. Si presentational, analytical and/or lab/field skills, and demonstrate knowledge of general intertidal ecology experimental design and analysis skills.				ples. Show excellent of general intertidal nal, thinking, a good kamples. Show good	
	С	Evidence of some analytical (or critical) abilities and logical (or coherent) thinking with an adequate (but incomplete) grasp of the subject, but little or no evidence of original thinking, limited background reading and use of named (organism) examples. Show fair presentational, analytical and/or lab/field skills, and demonstrates some knowledge of general intertidal ecology and adequate abilities of experimental design and analysis.				
	D Evidence of retention of a minimum of relevant information of the subject (i.e. knowledge is very incomplete), with limited organizational, analytical or presentational skills. Show insufficient evidence of background reading, or familiarity with lab/field techniques. Poor knowledge of general intertidal ecology and misunderstanding of experimental design and analysis.					
	Fail	Evidence of poor or inadequate knowledge and understanding of the subject, and a lack of coheren organization and/or excessive irrelevancy. Limited or no evidence of familiarity with relevant reading mat lab/field techniques, or knowledge of general intertidal ecology, and misuse of experimental design and skills.				
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures				16	
	Field wor	rk	field trip/project work		28	
	Project w	vork			6	
	Tutorials				4	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	·	Details		leighting in final course grade (%)	
	Assignm	ents			40	
	Examination				60	
Required/recommended reading and online materials	Morton, B. & Morton, J.: The Seashore Ecology of Hong Kong (Hong Kong University Press, 1983) Little, C. & Williams, G.A. & Trowbridge, C.D.: The Biology of Rocky Shores (Oxford University Press, 2009) TBC					
Course Website		v.biosch.hku.hk/ecology/lsc/				

BIOL3319 Terrestrial ecolog	Academic Year	2014				
Offering Department	Biological Sciences Quota 30					
Course Co-ordinator	Dr B Guenard, Biological Sciences (bguenard@hku.hk)					
Teachers Involved	Dr B Guenard, Biological Sciences					
Course Objectives	To enable motivated students to acquire the knowledge and skills needed to solve real problems in terrestrial ecology.					
Course Contents & Topics	This course will focus on the ecology of terrestrial habitats. The emph tropical East Asia, but the course will also include an overview of p scale. Students will first learn about the geological history of the land broad distribution of major terrestrial ecosystems in Tropical East Asi different important processes including herbivory, carnivory, pollination terrestrial ecosystems. The second half of the course will start with a nowadays and the important process of ecological succession. Reforests can be restored will then be introduced. Two other major threa alien invasive species and wildfire will also be addressed. The course well as problem-based learning exercises. The practical component of the basic field techniques used in terrestrial ecology, including vegetat small mammal trapping, the use of infrared-triggered cameras to sur and methods for quantifying invertebrate abundance.	patterns and process nass on earth, the bid a. Then, students win, seed dispersal and the degraded terrest storation ecology ar ts to terrestrial ecosy e content is delivered the course will introcion surveys, bird con	ses on a global opeography and II begin to learn denergy flow in rial ecosystems and how tropical estems including the by lectures as duce students to munity studies,			

Course Learning Outcomes	On succes	ssful completion of this course, stude	nts should be able to:			
	state. 2. Unders and methods. Plan and	stand the patterns and processes of tand the various threats to terrestrial ods to manage and restore degraded and conduct baseline study of terrestrial p the skill to be an active learner thro	ecosystems, methods to reduce terrestrial ecosystems.	the impac	et of those threats	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL3303 Conservation ecology				
Offer in 2014 - 2015	Y 2nd	d sem	Exami	nation	May	
Offer in 2015 - 2016	Υ	,				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for atta course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of thought, ability to integrate and synthesize information, and ability to apply knowledge to a wide range of of familiar and unfamiliar situations. Apply highly effective presentational skills. Strong evidence of clear atterthoughtful and reflective thinking.				n evidence of original de range of complex,	
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, integration of materials and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate effective presentational skills. Evidence of clear attention to thoughtful and reflective thinking.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective presentational skills. Little evidence of clear attention to thoughtful and reflective thinking.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities and little attempt at integration. Show limited ability to apply knowledge to solve problems. Apply limited effectiveness in presentational skills. Lack of attention to thoughtful and reflective thinking.					
	Fail	Demonstrate little or no evidence of com outcomes. Lack of analytical and critical al knowledge to solve problems. Organization	bilities, logical and coherent thinking. SI	how very little	or no ability to apply	
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laborato	ry	laboratory & field work		24	
	Tutorials	•			14	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	·	Details		Veighting in final course grade (%)	
	Assignme	ents			50	
	Examina	tion			50	
Required/recommended reading and online materials	Dudgeon Kong)	Corlett R.T.: The Ecology of Tropical East Asia (Oxford University Press, 2009). Dudgeon D. and Corlett R. T.: Ecology and Biodiversity of Hong Kong (Friends of the Country Parks, Hong				
Course Website	http://wwv	v.biosch.hku.hk/ecology/lsc/				
Additional Course Information		se will be offered subject to a minimul	m enrollment number and availa	ability of tea	achers.	
				,		

BIOL3320 The biology of m	Academic Year	2014			
Offering Department	Biological Sciences Quota 30				
Course Co-ordinator	Dr L Karczmarski, Biological Sciences (leszek@hku.hk)				
Teachers Involved	Dr L Karczmarski, Biological Sciences				
Course Objectives	Few other groups of animals have captured the public's imagination the whales and dolphins have. This course covers the evolutionary to conservation of marine mammals: whales, dolphins and porpoises (pinnipeds), manatees and dugongs (sirenians) and sea otters. Stude ecology of mammalian life in the aquatic environment, their role in the momentary and socio-ecology, and the current threats to these animals in the search of the complexity and socio-ecology.	piology, ecology, be (cetaceans), seals dents will learn to un narine ecosystem, th	ehaviour, and and walruses nderstand the eir behavioural		
Course Contents & Topics	The course begins with an overview of marine mammal species and the review of the various adaptations that have evolved to meet the chall Next, the course discusses the life history, reproductive strategies, economic mammals, highlighting the similarities and differences betwee diverse group of animals. This is followed by sessions on behaviour discuss animal movement, diving and ranging behaviour, foraging strategies animals. The course concludes with a discussion of human influences examples of critically endangered species and populations, and a review strategies; our emphasis is on the importance of applying the knowledges.	lenges of the marine cology and population species in this and behavioural eccurates, ecology of goes that guide the dail is on the fate of many of conservation and	e environment. In dynamics of taxonomically ology; here we roup living and y lives of these ine mammals, d management		

	course is	ivioural ecology in ensuring long-term ef designed for 3rd and 4th year student innovative research techniques and r	ts; it includes field trips, discussions	s of current scientific	
	literature-searches and will discuss their projects during classroom debates, training their skills in conceptual and analytical approaches to science.				
Course Learning Outcomes	On succe	essful completion of this course, students	s should be able to:		
	 Appreciate marine mammal diversity and biogeography. Understand how mammals adapt and function in an aquatic environment and their role in the mar ecosystem. Understand and appreciate the complexity of interactions between environmental selective pressu and marine mammal behaviour, population structure and demography. Appreciate the socio-ecological diversity and behavioural complexity of marine mammals. Think analytically in terms of marine mammal ecology and anthropogenic impacts in the rapic changing world. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	SIOL2306 Ecology and evolution			
Offer in 2014 - 2015	N	Examination			
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Evidence of a thorough grasp of the subject i reading and excellent use of named example excellent use of a broad range of fundamenta to learn, great abilities of independent work, Excellent or outstanding work relative to what	les and case studies. Evidence of independ al concepts to draw insightful and logical conc , effective presentation skills with excellent	dent critical thought with clusions. Show eagerness	
	В	Evidence of a good grasp of the subject as demonstrated by some background reading and appropriate use of named examples and some case studies. Evidence of good critical thought, although not necessarily original. Good and very good (but not outstanding) abilities of independent work, effective presentation skills with good analytical and logical argumentation. Good general command of acquired knowledge to draw meaningful and logical conclusions. Work more than sufficient for what is required at degree level.			
	C Demonstrate an adequate, but not coherent and incomplete grasp of the subject, with limited background reading and limited use of named examples and case studies. Some abilities of logical critical thinking, but not insightful and/or independent; only partial abilities to use acquired knowledge and work independently to draw meaningful conclusions. Fair presentation skills, with mostly correct argumentation, but limited (or no) abilities to integrate broader concepts. Work sufficient for what is required for degree level.				
	D Demonstrate some grasp of the subject, but partial and limited to the most basic concepts, examples, and limited (or none) case studies. Insufficient evidence of background reading, limited abilities of critical independent thinking, and not particularly effective presentation skills with generally weak logical argumentation and restricted ability of drawing appropriate conclusions. Work barely meets what is required at degree level.				
	Fail	No evidence of basic minimum knowledge a and no familiarity with any relevant examples ineffective presentation skills with poor argum reach degree level.	s and case studies. Inadequate evidence of	coherent logical thought;	
Course Type	Lecture v	vith laboratory component course			
Course Teaching	Activitie	es	Details	No. of Hours	
& Learning Activities	Lectures	;		24	
	Laboratory		including field trips, research site vists, demonstration of research techniques, interactive classroom debates	32	
	Project v	vork	project work review	8	
	Reading / Self study			60	
Assessment Methods and Weighting	Method	S	Details	Weighting in final course grade (%)	
	Assignments		including active participation/continuous assessment	55	
	Examina	ation		45	
Required/recommended reading and online materials	Reynolds Perrin WI	Hoelzel AR (ed). Marine mammal biology: An evolutionary approach (Blackwell Science 2002) Reynolds JE & Rommel SA (eds). Biology of marine mammals (Smithsonian Institution Press 1999) Perrin WF, Wursig B & Thewissen JGM (eds). Encyclopedia of marine mammals (Academic Press 2008) Mann J, Connor RC, Tyack PL & Whitehead H (eds). Cetacean societies (The University of Chicago			
Course Website	http://ww	w.biosch.hku.hk/ecology/lsc/			
Additional Course Information	· ·	se is offered in alternate year.			
		se will be offered subject to a minimum	enrollment number and availability of	teachers.	

BIOL3401 Molecular bio	BIOL3401 Molecular biology (6 credits)		Academic Year	2014
Offering Department	Biological Sciences Quota 130			130
Course Co-ordinator	Prof B K C Chow, Biological Sciences (bkcc@hku.hk)	Prof B K C Chow, Biological Sciences (bkcc@hku.hk)		
Teachers Involved	Prof B K C Chow, Biological Sciences			

	Dr K W Y `	Yuen, Biological Sciences				
Course Objectives		To provide students with recent knowledge in molecular biology with special emphasis on the study of gene structure and function at the molecular level.				
Course Contents & Topics	from DNA emphasis biochemica and DNA	The course includes a detailed account of the molecular processes in eukaryotic and prokaryotic cells, from DNA replication, RNA transcription, protein translation, to post-translational modifications with special emphasis on the regulation of prokaryotic and eukaryotic gene expression. Recently developed biochemical techniques including oligonucleotide synthesis, DNA sequencing, complementary screening and DNA cloning, site-directed mutagenesis, polymerase chain reaction and transgenic technology will also be discussed.				
Course Learning Outcomes	On succes	On successful completion of this course, students should be able to:				
	eukaryotic 2. Underst translation 3. Explain 4. Demon	he basic structures of DNA, RN cells. and the biochemical processes in all modifications in prokaryotes an and describe the regulation of ger strate knowledge and understar techniques including PCR, site-di	nvolved in DNA replication deukaryotes. the transcription in prokaryonding of the underlying	n, transcription, to tes and eukaryot concepts associ	ranslation and post	
Pre-requisites (and Co-requisites and Impermissible combination)		BIOL2103 Biological sciences lab Basic biochemistry	oratory course or BIOL2	2220 Principles	of biochemistry or	
Offer in 2014 - 2015	Y 1st s	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentations skills.				
	Fail	Demonstrate little or no evidence of contact of analytical and critical abilities, let o solve problems. Apply minimally effiand/or unable to draw appropriate contentions.	ogical and coherent thinking. She ective or ineffective lab skills a	ow very little or no ab nd techniques. Misu	se of data and results	
Course Type	Lecture wit	th laboratory component course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laborator	у			20	
	Tutorials				6	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods				Weighting in final course grade (%)	
	Assignments		assessment of prac	tical work	20	
	Examinati	ion			80	
Required/recommended reading and online materials	J. Watson B. Lewin: 0	: Molecular Biology (McGraw-Hill et al.: Molecular Biology of the Ge Gene IX (Jones and Bertlett, 2008 burnal articles and web learning m	ne (Benjamin Cummings,	2004)		
	100					

BIOL3402 Cell biology and cell technology (6 credits)		Academic Year	2014
Offering Department Biological Sciences		Quota	120
Course Co-ordinator	Prof A S T Wong, Biological Sciences (awong1@hku.hk)		
Teachers Involved	Prof A S T Wong, Biological Sciences Prof M L Chye, Biological Sciences Dr W Y Lui, Biological Sciences		

Course Objectives		To provide a coherent understanding of the structure and function of cells, and the principles and applications of cell culture and instrumentation in biology and biotechnology				
Course Contents & Topics	Cell mem transport.	 Cell Biology Cell membranes. Organelles. Cellular transport: ions transport and ions channels. Protein and RN. transport. Membrane potentials, Action potentials. Cell junctions. Extracellular Matrix. Cell-cell interaction Cell-matrix interactions. 				
	Mammalia Media for Mechanis	mulation, growth factors and desion of cryopreservation. iques in plant cell culture	continuous cell lines. Cell types ar gn of serum-free media. Culture la	b facilities and sterilization.		
Course Learning Outcomes		shoot cultures. Explant regenerati	on. Protoplasts. Secondary metabol	lites.		
Course Learning Outcomes	1. Acquire 2. Demon	e fundamental knowledge on cell b strate basic laboratory techniques sight into real-life applications in c	iology and cell technology. on cell culture.			
Pre-requisites (and Co-requisites and Impermissible combination)		BIOL2103 Biological sciences la 0 Basic biochemistry	boratory course or BIOL2220 Prin	nciples of biochemistry or		
Offer in 2014 - 2015	Y 1st	sem	Examina	ation Dec		
Offer in 2015 - 2016	Y	Υ				
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational skills. Writings consistently demonstrate informed, thoughtful intellectual engagement with broad range of relevant concepts.				
	В	B Demonstrate substantial command of a broad range of knowledge required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational skills. Writings mostly demonstrate informed, thoughtful intellectual engagement with broad range of relevant concepts.				
	С	C Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational skills. Writings mostly indicate informed, intellectual engagement with concepts or theories but not always with sufficient depth, breadth or understanding.				
	D	Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills. Writings indicate some intellectual engagement with concepts or theories but mostly at a superficial level.				
	Fail	Lack of analytical and critical abilities, to solve problems. Organizational sk	command of knowledge required for attaining logical and coherent thinking. Show very little tills are minimally effective or ineffective. or theories. Writings are irrelevant or superfice.	e or no ability to apply knowledge Writings reveal an absence of		
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laboratory			24		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)		
	Assignm	ents	assessment of practical work	30		
	Examina	tion		70		
Required/recommended reading and online materials	Alberts, B Mather, J	Textbooks: Alberts, B. et al.: Molecular Biology of the Cell (Garland, 2008, 5th ed.) Mather, J. P.: Introduction to Cell and Tissue Culture, Theory and Techniques (Plenum, 1998) Collins, H.A. & Edwards, G.S.: Plant Cell Culture (Oxford: Bios Scientific, 1998)				
	Reference TBC	es:				
Course Website	http://moo	odle.hku.hk/				

BIOL3403 Immunology	(6 credits)	Academic Year	2014
Offering Department	g Department Biological Sciences		
Course Co-ordinator	Dr B L Lim, Biological Sciences (bllim@hku.hk)		
Teachers Involved	Dr B L Lim, Biological Sciences Prof W W M Lee, Biological Sciences		
Course Objectives	To provide a broad understanding of the animal immune system.	Topics will also include	the application of

	a variety of	f immunological methods to resear	ch and disease diagnosi	S.		
Course Contents & Topics	biological pand cha pathways. autoimmun	Immunological functions in the vertebrates and analogous activities in invertebrates. Structures and biological properties of immunoglobulins and T-cell receptors. Divergence of antibody genes. Emergence and characteristic of lymphoid tissues. Major histocompatibility complex. Complement pathways. Immunity against bacteria, viruses and parasites. AIDS, Vaccination, hypersensitivity, and autoimmunity. Immunological tests and immunochemical techniques using non mammalian and mammalian antibodies and their application to various biological problems.				
Course Learning Outcomes	Describe mechanism Describe Explain vaccination Explain I	On successful completion of this course, students should be able to: 1. Describe the structure and function of the immune molecules which are involved in the body defense mechanisms, including antibody, T-cell receptor, cytokines, MHC and complement proteins. 2. Describe the organization of the mammalian immune system in terms of genes, cells and tissues. 3. Explain the underlying mechanisms associated with transplant rejection, transfusion reaction and vaccination. 4. Explain how the immune system responds to infections by bacteria, viruses and parasites. 5. Understand antigen-antibody interaction and the principle of immunoassays.				
Pre-requisites (and Co-requisites and Impermissible combination)		ass in BIOC2600 Basic biochemistry or BIOL2220 Principles of biochemistry or BIOL2103 Biological ciences laboratory course				
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ	(
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A 1. Exceptionally good performance demonstrating comprehensive understanding of the subject matter. 2. Critical insight and analysis into the scientific literatures. 3. Superior writing, presentation and group communication skills.					
	B 1. Good performance demonstrating full understanding of the subject matter. 2. Coherent insight and analysis into the scientific literatures. 3. Good writing, presentation and group communication skills.					
	C 1. Satisfactory performance demonstrating adequate understanding of the subject matter. 2. Some insight into the scientific literatures. 3. Adequate writing and communication skills.					
	D 1. Limited performance demonstrating some understanding of basic subject matter. 2. Some ability to use the scientific literatures. 3.Limited writing and communication skills. Fail 1. Poor understanding of subject matter. 2. Little to no insight into use of the scientific literatures. 3. Unable to write					
	Fail	or communicate.	2. Little to no insignt into use	of the scientific fiteratt	ires. 3. Oriable to write	
Course Type	Lecture wit	h laboratory component course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				30	
	Laboratory	у	during reading wee	ek	16	
	Tutorials				6	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Examinati	on			80	
	Laboratory	y reports			20	
Required/recommended reading and online materials	Benjamin 8	J. Kuby: Immunology (Freeman and Company, 2003 or 2007-6thd ed., or 2013-7th ed.) Benjamin & Leskowitz: Immunology: A Short Course (Wiley-Liss, 2007, 6th edition. Or the latest edition) I. Roitt, J. Brostoff and D. Male: Immunology (Mosby, latest 2 editions)				
Course Website	http://mood	dle.hku.hk/				
Additional Course Information	This course	e will be offered subject to a minim	um enrollment number a	and availability of te	eachers.	

BIOL3405 Molecular micro	obiology (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota 30			
Course Co-ordinator	Dr J S H Tsang, Biological Sciences (jshtsang@hku.hk)				
Teachers Involved	Dr J S H Tsang, Biological Sciences				
Course Objectives	This course is intended for biology, biotechnology and biochemistry the modern fundamentals of microbiology. At the end of the course physiological, biochemical and molecular aspects of microbiology.				
Course Contents & Topics	The basic biochemistry of microorganisms will be described. The in microbes in the environment will be examined. The adaptation of means of physiological changes and genetical alterations will be bacteria and viruses will be considered. The molecular biology of platheir association with medical aspect will be discussed. The us microorganisms will be explored.	the microbes to the illustrated. The molesmids and transpose	e environment by lecular biology of able elements and		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the intrinsic reorganization of microbes in response to 2. Comprehend the major modes of regulation in the microbe. 3. Explain the biology of bacteriophages and plasmids. 4. Realize the importance of transposable elements in the survival of	the changing enviro	nments.		
	220				

	5. Apprec	iate the development of modern tec	hniques in studying mic	roorganisms.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	Pass in BIOL2103 Biological sciences laboratory course				
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Y			<u>'</u>		
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an ad course learning outcomes. Demonstrate and logical thinking, with evidence of oriotata and results to draw appropriate presentational skills.	thorough grasp of the subjectional thought. Apply highly effort	ct. Show strong analytic ective lab skills and tech	al and critical abilities iniques. Critical use of	
	В	Demonstrate substantial command of a the course learning outcomes. Demonstr abilities and logical thinking. Apply effective appropriate conclusions. Apply effective	ate substantial grasp of the su ective lab skills and technique	ubject. Show evidence on ues. Correct use of da	f analytical and critical	
	С	Demonstrate general but incomplete co learning outcomes. Demonstrate general critical abilities and logical thinking. Apperroneous use of data and results to drapresentational skills.	al but incomplete grasp of the ly moderately effective lab sl	ne subject. Evidence of kills and techniques. Mo	some analytical and ostly correct but some	
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activities Details			No. of Hours		
& Learning Activities	Lectures				24	
	Laborato	ory			20	
	Tutorials				6	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Examina	tion			70	
	Laborato	ory reports			20	
	Presentation				10	
Required/recommended reading and online materials	Willey, Sh Watson, E					
Course Website	http://mod	http://moodle.hku.hk/				
Oou.co moscito	This course will be offered subject to a minimum enrollment number and availability of teachers.					

BIOL3406 Reproduction as	nd reproductive biotechnology (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	30
Course Co-ordinator	Prof A O L Wong, Biological Sciences (olwong@hku.hk)	'	
Teachers Involved	Prof A O L Wong, Biological Sciences		
Course Objectives	To provide a comprehensive overview on modern concepts and reproductive biotechnology in human and animal models.	I recent advance in repro	oductive biology &
Course Contents & Topics	 Basic concepts of reproduction, evolution of sex, human & a behavior. Molecular mechanisms for sex determination, developmental a systems. Neuroendocrinology of reproductive system and recent advasteroid feedback. Environmental endocrine disruptors and recent advances in breproduction in human. Embryonic stem cells & induced pluripotent stem cells medicine/therapeutic cloning. Germ line engineering & gene therapy, animal cloning and primodels. 	spects of gametogenesis ances in kisspeptin & G iotechnology for fertility and their applications	s and reproductive nRH system and control & assisted in regenerative
Course Learning Outcomes	On successful completion of this course, students should be able	e to:	

	developme 2. Have a sexual beh 3. Have a functions a 4. Compre primordial	& sexual behaviors in animals to ent of reproductive systems. In appreciation of the neuroendocrine navior, parental care, and pregnancy & basic understanding on the concept and the causes of human infertility & as eithend a wide range of modern tect germ cell transplantation and the applenerative medicine/therapeutic cloning	e control of reproductive functions giving birth to baby in human & mat to fenvironmental endocrine disrussisted reproduction. hnologies for germ line engineeri lications of embryonic stem cells/in-	& reproductive cycle, mmalian models. ptors for reproductive ng, animal cloning &
Pre-requisites (and Co-requisites and Impermissible combination)		BIOL2103 Biological sciences laborat Biostatistics or BIOL2306 Ecology & e		es of biochemistry or
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec
Offer in 2015 - 2016	Y		Zamilato	200
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an advan- learning outcomes. Show strong analytical ar and ability to apply knowledge to a wide ran- lab skills and techniques. Critical use of data effective organizational and presentational sk	nd critical abilities and logical thinking, with a ge of complex, familiar and unfamiliar situa and results to draw appropriate and insightf tills.	vidence of original thought, iions. Apply highly effective ul conclusions. Apply highly
	В	Demonstrate substantial command of a broa- learning outcomes. Show evidence of anal knowledge to familiar and some unfamiliar sit results to draw appropriate conclusions. Apply	lytical and critical abilities and logical thir tuations. Apply effective lab skills and technic	king, and ability to apply ques. Correct use of data of
	С	Demonstrate general but incomplete commoutcomes. Show evidence of some analytical to most familiar situations. Apply moderately use of data and results to draw appropresentational skills.	I and critical abilities and logical thinking, an effective lab skills and techniques. Mostly	d ability to apply knowledge correct but some erroneous
	D	Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentations skills.		
	Fail	Demonstrate little or no evidence of comma Lack of analytical and critical abilities, logical to solve problems. Apply minimally effective and/or unable to draw appropriate conclusic ineffective.	and coherent thinking. Show very little or note or ineffective lab skills and techniques.	ability to apply knowledge disuse of data and results
Course Type	Lecture wi	th laboratory component course		
Course Teaching	Activities	.	Details	No. of Hours
& Learning Activities	Lectures			24
	Laborator	у		24
	Tutorials			6
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Examinat	ion		70
	Laborator	y reports		20
	Test		Test & Continuous Assessment	10
Required/recommended reading and online materials	2. 'Yen a Elsevier/Si 3. 'Stem (Cambridge 4. 'Essenti 5. 'Pregna University 6. 'Assistr Coomaras 7. 'Reprod	uction System at a Glance' by L.J. Hefrand Jaffe's Reproductive Endocrino aunders (2014) Cells in Reproductive Medicine: Basic University Press (2013) al Reproduction' by M.H. Johnson, Wilnoy after Assisted Reproductive Tech Press (2012) ed Reproduction Techniques: Chall amy, Wiley-Blackwell (2012) uctive and Developmental Toxicology'	ology' (e-Book) by J.F. Strauss ic Science & Therapeutic Potentia ley-Blackwell (2013) inology' by E.R.M. Jauniaux & B.R. lenges & Management Option'	`III & R. Barbieri, I' by C. Simon et al, M.B. Rizk, Cambridge by K. Sharif & A. D11)
	9. 'Reprod	luctive Endocrinology and Infertility' (
Course Website	9. 'Reprod Springer (2	luctive Endocrinology and Infertility' (2010).		
Course Website Additional Course Information	9. 'Reprod Springer (2 http://mood	luctive Endocrinology and Infertility' (2010).	(e-Book) by D. T. Carrell & C. M.	

BIOL3408 Genetics (6 cre	dits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota	50		
Course Co-ordinator	Dr C S C Lo, Biological Sciences (clivelo@hku.hk)				
Teachers Involved Dr C S C Lo, Biological Science Dr J Zhang, Biological Sciences					

Course Objectives	This cours genetics	This course aims to provide students with fundamental knowledge of classical, molecular and population genetics						
Course Contents & Topics	analysis a and recom population	Topics will include cellular reproduction, principles and chromosomal basis of Mendelian genetics, linkage analysis and mapping, concept and definition of the gene, molecular mechanisms of mutation, DNA repair and recombination, DNA transposition, extranuclear inheritance, developmental genetics, quantitative and population genetics. Students are strongly encouraged to take BIOL2303 Molecular Biology to get a more comprehensive coverage of topics in molecular genetics.						
Course Learning Outcomes	Apprecia Use difference Apply of	On successful completion of this course, students should be able to: 1. Appreciate the beauty of genetic organizations in nature. 2. Use different genetic principles to explain hereditary traits observed in nature and laboratories. 3. Apply qualitative and quantitative experimental methodologies for genetic analysis at individual and population levels.						
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Bl	OL2103 Biological sciences laboratory o	course					
Offer in 2014 - 2015	Y 1st	sem	Examina	ion	Dec			
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F							
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Integration of the full range of appropriate theories, principles, evidence and techniques							
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. General integration of theories, principles, evidence and techniques							
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Some partial integration of theories, principles, evidence and techniques							
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Limited integration of theories, principles, evidence and techniques							
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Little or no or inapt integration of theories, principles, evidence and techniques							
Course Type	Lecture wi	th laboratory component course						
Course Teaching	Activities	3	Details		No. of Hours			
& Learning Activities	Lectures				24			
	Laborator	у			24			
	Tutorials		tutorials & laboratories		6			
	Reading / Self study				100			
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)			
	Assignments		laboratory reports, assignmen	ts	30			
	Examinat	ion			70			
Course Website	http://moo	dle.hku.hk/						
Additional Course	This cours	e will be offered subject to a minimum e	nrollment number and availability	of teac	This course will be offered subject to a minimum enrollment number and availability of teachers.			

BIOL3409 Business aspec	ets of biotechnology (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	40
Course Co-ordinator	Dr W B L Lim, Biological Sciences (bllim@hku.hk)	·	
Teachers Involved	Dr W B L Lim, Biological Science Dr G Panagiotou, Biological Science		
Course Objectives	The course will give an overview of the innovative develop students with useful tools in learning how an exciting resear model.		
Course Contents & Topics	The course will first introduce the history and current develor companies in healthcare biotechnology, protein pharmac enzymes, transgenic animals and crops, will be taken as exa principles. Topics on 4P of biotechnology industry, intellectu process, licensing, start-up and fundraising will be covered. Fup, clinical trials, field tests, regulatory agencies, good la practice will be illustrated. Throughout the course, guest er biotech industry will be presenting case studies and expla pharmaceutical companies.	ceuticals, vaccines, diagn imples to illustrate the under al properties, patent laws, Research and development aboratory practice and goot itrepreneurs, managers and	ostics, industrial erlining technology patent application of products, scale and manufacturing d directors of the
Course Learning Outcomes	On successful completion of this course, students should be a	able to:	

	businesses 2. Understa 3. Navigate up, to mark 4. Gain tec	and and demonstrate how discoveries the various steps in the developmen	s and inventions are commercialized to f a biotechnology derived produce biotechnology and bioprocessing it	d. ct: from bench, to scale-		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in any	y level 2 BIOL or BIOC course				
Offer in 2014 - 2015	Y 2nd	sem	Examination	No Exam		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Students acquire exceptional skills and kno business and technological developments of	wledge from the course and are capable of f various biotechnology ventures.	independently analyzing the		
	В	Students demonstrate a broad and in-depth understanding of the current developments in biotechnology industry and are capable of analyzing the business and technological developments of various biotechnology ventures under guidance.				
	С	C Students demonstrate a broad and in-depth understanding of the current developments in biotechnology industry.				
	D	D Students demonstrate a moderate understanding of the current developments in biotechnology industry.				
	Fail	Students fail to demonstrate a moderate und	derstanding of the current developments in b	iotechnology industry.		
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Group wo	rk	group work/project/visit	12		
	Reading /	Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments		Patent (10%), Licensing agreement (10%), Fermentation economics (5%), Vaccine development (15%), Business plan (30%), Participation (10%)	80		
	Presentati	on		20		
Required/recommended reading and online materials	TBC					
Course Website	http://mood	lle.hku.hk/				
Additional Course Information	This course	e will be offered subject to a minimum	n enrollment number and availability	of teachers.		

BIOL3501 Evolution (6 cr	edits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota	50	
Course Co-ordinator	Dr M Sun, Biological Sciences (meisun@hku.hk)	'		
Teachers Involved	Dr M Sun, Biological Sciences			
Course Objectives	Evolution is the cornerstone of modern biology. The course of contemporary evolutionary biology, including the history of adaptation, speciation, and evolution as an explanatory fram The course emphasizes the interplay between theory and students with the process of science.	of evolutionary biology, evolu- nework at all levels of biologic	tionary processe cal organization.	
Course Contents & Topics	Introduction to Evolution - The relevance of evolution to everyday life - Cases for evolutionary thinking Evolution as Fact - Patterns of evolutionary change - The evidence for evolution Evolution as Theory - Before Darwin - Darwinism - The Modern Synthesis & beyond The Mechanisms of Evolution - The origin of genetic variation: mutation - Genetic drift: evolution at random. - Natural selection, sexual selection, and adaptation. - Migration Evolution and Biodiversity - Species - Speciation - Evolution and development			

	- The histo	ry of life g Evolutionary Trees				
Course Learning Outcomes	On successful completion of this course, students should be able to:					
	 Describe lead to spe Have an Apply 	 Familiar with the facts and theory of evolution. Describe Darwin's theory of evolution by natural selection and how the process of natural selection can lead to speciation. Have an advanced understanding of the modern evolutionary theory. Apply evolutionary thinking to real world problems in agriculture, medicine, and biodiversity conservation. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	DL2306 Ecology and evolution				
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	over a wide range of topics covered by the	rating excellent understanding of the subject many rating excellent understanding of the subject many recourse, and skillful applications of concepts/ ties in critical thinking and logical reasoning, we the critical issues in the field.	theories in solving new or		
	В	Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject, showing evidence of attaining most of the course learning outcomes.				
	С	Adequate performance demonstrating some understanding of the subject matter, an ability to handle relatively simple problems, but showing incomplete command of knowledge required for attaining most of the expected course learning outcomes.				
	D	D Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating serious deficiencies in knowledge required for attaining most of the expected course learning outcomes.				
	Fail	Fail Poor performance in all aspects of the course, showing little evidence of learning, lacking real understanding of the subject matter, demonstrating deficiencies serious enough to make it inadvisable to proceed further without additional course work.				
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities						
	Lectures			36		
	Lectures Tutorials			36 12		
		ork				
	Tutorials Project wo	ork Self study		12		
Assessment Methods and Weighting	Tutorials Project wo		Details	12 12		
	Tutorials Project wo	Self study	Details	12 12 100 Weighting in final		
	Tutorials Project wo Reading / Methods	Self study	Details	12 12 100 Weighting in final course grade (%)		
	Tutorials Project wo Reading / Methods Assignme	Self study nts on	Details including class participation (10%)	12 12 100 Weighting in final course grade (%)		
	Tutorials Project wo Reading / Methods Assignme Examinati	Self study nts on	including class participation	12 12 100 Weighting in final course grade (%) 10 50		
	Tutorials Project wo Reading / Methods Assignme Examinati Presentat Test J.C. Herror	Self study nts on	including class participation (10%)	12 100 Weighting in final course grade (%) 10 50		
and Weighting Required/recommended reading	Tutorials Project wo Reading / Methods Assignme Examinati Presentat Test J.C. Herror	Self study nts on ion n and S. Freeman: Evolutionary Ana Futuyma: Evolution, (3rd Edition, Si	including class participation (10%)	12 100 Weighting in final course grade (%) 10 50		
and Weighting Required/recommended reading	Tutorials Project wo Reading / Methods Assignme Examinati Presentat Test J.C. Herror Douglas J.	nts on ion and S. Freeman: Evolutionary Ana Futuyma: Evolution, (3rd Edition, Si	including class participation (10%)	12 100 Weighting in final course grade (%) 10 50		

BIOL3502 Conservation g	enetics (6 credits)	Academic Year	2014				
Offering Department	Biological Sciences	Quota	50				
Course Co-ordinator	Dr M Sun, Biological Sciences (meisun@hku.hk)	Dr M Sun, Biological Sciences (meisun@hku.hk)					
Teachers Involved	Dr M Sun, Biological Sciences						
Course Objectives	The course aims to familiarize students with fundamental principles genetics. The theories and methods will be taught with a balanced reptiles, amphibians, fish, invertebrates, as well as plants - to demoto answer a range of important questions in real world conservation	range of examples - onstrate how genetic d	mammals, birds				
Course Contents & Topics	Introduction to conservation genetics. Part I. Evolutionary Genetics of Natural Populations: - genetic diversity - characterizing genetic diversity: single loci and quantitative variatio - evolutionary impacts of natural selection, mutation, migration and t - genetic consequences of small population sizes; - maintenance of genetic diversity; - population genomics.		ge populations;				

Course Learning Outcomes	- loss of ge - inbreeding - inbreeding - population - geneticall Part III. Fro - resolving - genetic m - genetic m - genetic m - use of mo On success 1. Demons 2. Understa species. 3. Know the 4. Compre evolutionar 5. Describe implications 6. Gain ab species bic	g depression; a fragmentation; y viable populations. Im Theory to Practice: taxonomic uncertainties and defining ranagement of wild populations; sues in introduced and invasive specie anagement of captive populations; anagement for reintroduction; elecular genetics in forensics and understuction of this course, students trate an advanced understanding of the and the criteria for determining the corresponding to the relationships between gray potential in wild populations as in managing nature reserves.	erstanding species biol is should be able to: the concepts of conservation status of en diversity at population a denetic diversity, inbreading population size re-	ration genetics. dangered, vulnera and species levels seding, reproduct duction on genetic nic uncertainties,	ive fitness, and diversity and the in understanding	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIC	DL2306 Ecology and evolution or BIOL	.3303 Conservation ed	cology or BIOL340	8 Genetics	
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ			1		
Course Grade	A+ to F					
Grade Descriptors	A Exceptionally good performance demonstrating excellent understanding of the subject matter, extensive knowledge over a wide range of topics covered by the course, and skillful applications of concepts/theories in solving new or unfamiliar problems, showing strong abilities in critical thinking and logical reasoning, with evidence of significant insight and original thought in dealing with the critical issues in the field.					
	В	Good performance demonstrating capacity t matter, and an ability to handle the proble attaining most of the course learning outcome	ms and materials encount			
	C Adequate performance demonstrating some understanding of the subject matter, an ability to handle relatively simple problems, but showing incomplete command of knowledge required for attaining most of the expected course learning outcomes.					
	D	Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating serious deficiencies in knowledge required for attaining most of the expected course learning outcomes.				
	Fail	Poor performance in all aspects of the cours subject matter, demonstrating deficiencies additional course work.				
Course Type	Lecture wit	h laboratory component course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laboratory	1			12	
	Project wo	rk			12	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)	
	Assignme	nts			10	
	Examination	on			50	
	Presentati	on	including classroom	participation	25	
			(10%)			
	Test				15	
Required/recommended reading and online materials	Frankham e-book ava	et al: Introduction to Conservation Ger ilable	netics (Cambridge Uni	versity Press, 200	9, 2nd ed.)	
Course Website	http://mood	le.hku.hk/				
Additional Course Information	Website - to This course	o be listed will be offered subject to a minimum	enrollment number an	d availability of tea	achers.	

Offering Department	Biological	Sciences	Quota	120			
Course Co-ordinator	Prof B K (C Chow, Biological Sciences (bkcc@hku.hk)					
Teachers Involved	Dr L T O	C Chow, Biological Sciences Lee, Biological Sciences Γ Wong, Biological Sciences					
Course Objectives		e an advanced course on hormones and how they regulate me homeostasis in our body.	tabolism/growth,	reproduction an			
Course Contents & Topics	cell signa The hypo The GHR stress. Ca The gastr The enter Regulatio gastrin, G intake. Insulin an Reproduc The GnRI Interaction actions of The men endocrine broodines Osmoreg Posterior	History: discovery of blood borne factor or hormone. Chemical nature of hormones. Mechanisms of cel cell signaling. Secondary messengers. Responsivity and hormonal effects. The hypothalamic pituitary axis The GHRH-GH-IGF axis. The TRH-TSH-thyroid hormone axis. The CRH-ACTH-cortisol axis. Cortisol and stress. Catecholamine effects and their pathways. The gastrointestinal system The enteric nervous system. The cephalic phase, stomach phase and intestinal phase of food digestion. Regulation of acid secretion. Regulation of pancreatic exocrine and endocrine secretion. Gut hormones: gastrin, GIP, CCK, secretin, GLP-1, GLP-2 and motilin. Regulation of feeding, energy balance and food intake. Insulin and glucagon. Reproduction The GnRH-gonadotropin-sex hormone axis. Regulation of LH and FSH release. Male reproductive system Interaction of hormones produced by various cells in the testis to regulate spermatogenesis. Biological actions of testosterone. The erection reflex. Female reproductive system. Development of ovarian follicles. The menstrual cycle: hormonal control: Ovulation, fertilization and implantation. The placenta as an endocrine organ. Endocrine regulation of parturition. Hormonal control of milk secretion. Prolactin and broodiness. Osmoregulation Posterior pituitary hormone, ADH. Aldosterone and sodium balance. Angiotensin's effect on blood pressure. Atrial natriuretic peptide and its function in water and sodium balance.					
Course Learning Outcomes	1. Unders 2. Explain 3. Descril organs. 4. Explair	On successful completion of this course, students should be able to: 1. Understand the definition and natures of hormones. 2. Explain and describe secondary messenger pathways for hormones. 3. Describe the connection between pituitary the master gland with higher brain centers and periphers.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL2103 Biological sciences laboratory course					
Offer in 2014 - 2015	N	I	Examination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	В	learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational skills.					
		learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational skills.					
		Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational skills.					
		Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills.					
Fail Demonstrate little or no evidence of command of knowledge required for attaining the course lear Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to a to solve problems. Organizational skills are minimally effective or ineffective.							
		Lack of analytical and critical abilities, logical and coherent thinking. Show to solve problems. Organizational skills are minimally effective or ineffective).				
Course Type). 				
Course Teaching		to solve problems. Organizational skills are minimally effective or ineffective ith laboratory component course).	No. of Hours			
Course Teaching	Lecture w	to solve problems. Organizational skills are minimally effective or ineffective with laboratory component course Details	3.				
Course Teaching	Lecture w	to solve problems. Organizational skills are minimally effective or ineffective ith laboratory component course Details a 5-hour laboratory s		2			
Course Teaching	Lecture w Activitie Lectures	to solve problems. Organizational skills are minimally effective or ineffective ith laboratory component course Details a 5-hour laboratory sweek for 5 weeks		24			
Course Teaching	Lecture w Activitie Lectures Laborato Tutorials	to solve problems. Organizational skills are minimally effective or ineffective ith laboratory component course Details a 5-hour laboratory sweek for 5 weeks		29			
Course Teaching & Learning Activities Assessment Methods	Lecture w Activitie Lectures Laborato Tutorials	to solve problems. Organizational skills are minimally effective or ineffective ith laboratory component course Details a 5-hour laboratory sweek for 5 weeks / Self study	ession per	2: 2: 10: Veighting in fina			
Course Teaching & Learning Activities Assessment Methods	Lecture w Activitie Lectures Laborato Tutorials Reading	to solve problems. Organizational skills are minimally effective or ineffective with laboratory component course S Details a 5-hour laboratory sweek for 5 weeks / Self study Details	ession per	24 25 100 Veighting in fina course grade (%			
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Lecture w Activitie Lectures Laborato Tutorials Reading Methods	to solve problems. Organizational skills are minimally effective or ineffective in the laboratory component course S	ession per	No. of Hours 24 25 6 100 Veighting in fina course grade (%			

reading and online materials	Silverthorn: Human Physiology, An Integrated Approach (Pearson, 2006, 4" edition).
Course Website	http://moodle.hku.hk/
Additional Course Information	This course will be offered subject to a minimum enrollment number and availability of teachers. This course will be offered in alternative year.

		erdisciplinary approach (6 o	,			
Offering Department	Biological S		0	Quota	30	
Course Co-ordinator		atesen, Biological Sciences (rajan	@hku.hk)			
Teachers Involved	Dr K Shih,	atesen, Biological Sciences Civil Engineering g, Orthopaedics				
Course Objectives	 the biolog modern e the anthro affected by of applie investigation 	his interdisciplinary course seeks to provide students with an understanding of: he biology of coral, shrimps, oyster and starfish larvae modern environmental study techniques such as genomics, proteomics, transcriptomic and metabolomics he anthropogenic and climate change threats to larval biodiversity, how seafood and marine industries are fected by them of applied biology such as aquaculture, biofouling, and biomimetics through team projects and vestigations now scientists are borrowing from larvae across many different fields of engineering and medical science				
Course Contents & Topics	organisms studies and ecology, m graduates biomimetic molecular l integration focus on m Pearl Rive biomimetic	his advanced course for undergraduate and graduates is exploring larval biology of commercially important organisms such as corals, shrimps and oysters using interdisciplinary (science, engineering and biomaterial studies and techniques. This course is specifically designed to explore interdisciplinary aspects of marine cology, molecular biology, environmental engineering and biomaterial science that are relevant to science raduates to investigate recent developments and careers in areas such as aquaculture, biofouling, and iomimetics. After reading about basic larval biology topics, we will focus on the latest and most powerfuncelular biology techniques (e.g. genomics, proteomics, metatranscriptomics and metabolomics) and how attegration of these modern tools can inform us about larval structure-function relationships. The course will be useful for human society through aquaculture, biofouling, and iomimetics. Thus, this larval biology course is an interdisciplinary/multi-disciplinary endeavor incompassing the ecology, molecular biological and economic dimensions of the marine environment.				
Course Learning Outcomes	of aquatic forms (call - Students results obta	e students with key concepts that organisms (e.g. corals, oysters at ed 'larval biology'). should be able to critically evaluation with interdisciplinary technicarize students with certain interdisciplinary.	nd shrimps) reproduce ar te scientific applications a ques from larval and aqua	and discoveries that cantile life systems.	specialized larva	
		ecology, science, and engineerin				
Pre-requisites (and Co-requisites and Impermissible combination)		at least 24 credits of BIOL2XXX le	evel courses			
,	,					
·	N			Examination		
Offer in 2014 - 2015	·			Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016	N			Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N N	TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N N A+ to F	TBC TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N N A+ to F A B			Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N N A+ to F	TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N N A+ to F A B C	TBC TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	N N A+ to F A B C D Fail	TBC TBC TBC TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type	N N A+ to F A B C D Fail Lecture wit	TBC TBC TBC TBC TBC TBC		Examination		
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	N N A+ to F A B C D Fail Lecture wit	TBC TBC TBC TBC TBC TBC	Details	Examination	No. of Hours	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	N N A+ to F A B C D Fail Lecture wit Activities Lectures	TBC TBC TBC TBC TBC TBC TBC	Details	Examination	No. of Hours	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory	TBC TBC TBC TBC TBC TBC	Details	Examination	No. of Hours	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work	TBC TBC TBC TBC TBC TBC	Details	Examination	No. of Hours 2- 2- 3-	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory	TBC TBC TBC TBC TBC TBC	Details	Examination	No. of Hours 24 24 36	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work	TBC TBC TBC TBC TBC TBC	Details Details	V	No. of Hours 24 24 36 20 Veighting in fina	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities Assessment Methods	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work Reading /	TBC TBC TBC TBC TBC Self study		V	No. of Hours 24 36 20 Veighting in fina	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work Reading / Methods	TBC TBC TBC TBC TBC Self study		V	No. of Hours 24 24 36 20 Veighting in fina course grade (%	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities Assessment Methods	N N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work Reading / Methods Assignment	TBC TBC TBC TBC TBC TBC Self study		V	No. of Hours 24 36 20 Veighting in final course grade (%	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching & Learning Activities Assessment Methods	N A+ to F A B C D Fail Lecture wit Activities Lectures Laboratory Field work Reading / Methods Assignment Examination Presentation	TBC TBC TBC TBC TBC TBC Self study		V	No. of Hours 2- 3- 3- Veighting in fina course grade (%	

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BIOL3951 Ecology & biodiv	_			Academic Year	2014
Offering Department	Biological	Sciences		Quota	22
Course Co-ordinator	Dr L Karca	zmarski, Biological Sciences (leszek@l	nku.hk)		
Teachers Involved	Dr L Karca	zmarski, Biological Sciences			
Course Objectives		se is offered as a capstone experience a gy & Biodiversity Major during a field co			relevant to
Course Contents & Topics	best suit t	Every year a number of different potential courses may be offered. The precise contents will be tailored to best suit the topic and locality involved and will therefore vary according to the specific course being held. The basic contents will involve lectures, seminars and extensive field and follow-up laboratory work. It is essential that students contact the course coordinator for further information on the courses available.			
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand of the biodiversity and primary habitats in the ecosystem studied. 2. Establish the basic skills needed to identify target species associated with the field course. 3. Be knowledgeable about and able to implement sampling techniques for organisms in the particular ecosystems studied. 4. Understand the basic ecology of target species and how biotic and abiotic factors shape focal communities. 5. Be aware of the relationships between humans and the species and habitats of interest.				
Pre-requisites (and Co-requisites and Impermissible combination)	Ecology & Students	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Ecology & Biodiversity Major. Students are expected to have completed year 2 study satisfactorily. This capstone course is for Ecology & Biodiversity Major students only.			
Offer in 2014 - 2015	Y 2nd	2nd sem Examination No Exam			
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Evidence of a thorough grasp of the subject and relevant research techniques. Eagerness and enthusiasm to learn and excellent familiarity with relevant background reading and case studies. Exemplary handling of field data collection and excellent analytical skills. Ample evidence of independent critical thought with excellent use of a broad range of fundamental concepts and broader comparative perspective to draw insightful and logical conclusions. Show outstanding abilities of independent work, effective presentation skills with excellent analytical argumentation. Excellent or outstanding work relative to what is required at degree level.				
	B Evidence of a good grasp of the subject and relevant research techniques. Interest in learning and good-to-moderate familiarity with relevant background reading and case studies. Good handling of field data collection and commendable analytical skills. Good evidence of critical thought (although not always independent), with an appreciable use of fundamental concepts and consideration of broader comparative perspective in drawing logical conclusions. Good abilities of independent work, effective presentation skills with logical and analytical argumentation. Work more than sufficient for what is required at degree level.				
	C Demonstrate an adequate, but incomplete grasp of the subject and relevant research techniques. Moderate familiarity with relevant background reading and case studies, but no interest in learning beyond the adequate average level. Evidence of logical critical thinking (although not always independent), with mostly good use of fundamental concepts to draw logical conclusions. Fair presentation skills, with mostly correct argumentation, but limited (or no) abilities to integrate broader concepts. Work sufficient for what is required for degree level.				
	D	D Demonstrate some grasp of the subject, but only partial and with limited understanding of relevant research concepts and research techniques. Some familiarity with relevant case studies, but insufficient evidence of background reading and limited abilities of critical independent thinking. Ineffective presentation skills with generally weak logical argumentation with restricted ability of drawing appropriate conclusions. Work barely meets what is required at degree level.			
	Fail No evidence of basic a minimum grasp of the subject and the minimum relevant research techniques. No evidence of background reading and no familiarity with any relevant examples and case studies. Inadequate evidence of coherent logical thought; ineffective presentation skills with poor argumentation and no abilities to draw meaningful conclusions. Work fails to reach degree level.				
Course Type	Field cam	ps			
Course Teaching	Activities	S	Details		No. of Hours
& Learning Activities	Field wor				42
		/ Self study			100
Assessment Methods and Weighting	Methods	·	Details		Weighting in final course grade (%)
	Assignme	ents			35
	Report		project report (investigation & pre		65
Required/recommended reading and online materials	Students	will be directed to relevant scientific liter	rautre and websites		
Course Website	http://www	v.biosch.hku.hk/ecology/lsc/			
Additional Course Information	Subclass Subclass Enrollmen	majoring in E&B can choose either one A: Marine Mammal Field Course (2nd s B: Animal Behaviour Field Course (2nd at Procedure:	emester) semester)		ester Students are
	The course is open to enrollment only during the add/drop period of the 2nd semester. Students are				

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required to submit a brief (maximum 1-page) application letter (PDF file) via e-mail to the Course Coordinator (leszek@hku.hk) not later than 11 January 2016. The application shall include the following:

1. Personal and academic details

2. ID photograph

3. Brief description of academic interests

4. GPA

5. Pre-requisite courses taken and grades received (if pre-requisites are not met, a reasoned request for waiver)

All applications will be reviewed prior to the commencement of the 2nd semester and results will be announced within the 1st week of the add/drop period of the 2nd semester.

BIOL3991 Directed studie	s in ecolo	gy & biodiversity (6 credits)		Academic Year	2014	
Offering Department	Biological	Sciences		Quota	50	
Course Co-ordinator	Dr M Sun,	Biological Sciences (meisun@hku.i	hk)			
Teachers Involved	Superviso	rs and examiners from academic sta	aff, Biological Sciences			
Course Objectives		se aims to provide a stimulating luates to integrate and apply their kn			iodiversity Major	
Course Contents & Topics	student's commitme the course various m	The directed study can be a review of literature on a specific topic, or a lab or field study that enhances the tudent's understanding of the topic in the field of ecology & biodiversity. The student should obtain the ommitment of a supervisor in the area of the dissertation topic before submitting the registration form for ne course (available from the General Office of School of Biological Sciences). Supervisor will introduce arious methodologies/techniques and guide students to completion of the dissertation. Teaching will be informal and students will gain knowledge through discussion and feedback from their supervisors.				
Course Learning Outcomes	1. Acquair 2. Have a 3. Apply s	On successful completion of this course, students should be able to: 1. Acquaint with the process of science. 2. Have a better understanding of the nature of ecology & biodiversity. 3. Apply scientific methods to address important issues in various biological disciplines. 4. Develop the key intellectual skills that will be valubale for all scientific studies.				
Pre-requisites (and Co-requisites and Impermissible combination)	Ecology &	least 24 credits of advanced level Biodiversity Major. one course is for Ecology & Biodive	-	(BIOL3XXX or	BIOL4XXX) in the	
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ				'	
Course Grade	A+ to F					
Grade Descriptors	A Evidence of complete or near-complete understanding and a thorough grasp of the subject matter as demonstrated by attainment of all learning outcomes. Excellent critique and knowledge of relevant literature and identification of research hypothesis. Well designed scientific approach to test research hypothesis. Show excellent organizational and/or analytical skills. Demonstrate comprehensive, critical, assessment of findings and professional presentation of research work.					
	B Evidence of near-complete understanding and a good grasp of the subject matter as demonstrated by attainment of the majority of learning outcomes. Good critique and knowledge of relevant literature and identification of research hypothesis. Appropriately designed scientific approach to test research hypothesis. Show good organizational and/or analytical skills. Demonstrate effective, critical, assessment of findings and good presentation of research work.					
	Evidence of adequate understanding and grasp of the subject matter as demonstrated by general but incomplete attainment of most of the learning outcomes. Acceptable critique and knowledge of relevant literature and identification of research hypothesis. Adequately designed scientific approach to test research hypothesis. Show fair organizational and/or analytical skills. Demonstrate adequate but not necessarily critical, assessment of findings and presentation of research work.					
	D	D Evidence of limited understanding and grasp of the subject matter as demonstrated by incomplete attainment of many of the learning outcomes. Limited critique and knowledge of relevant literature and identification of research hypothesis. Poorly designed scientific approach to test research hypothesis. Show fair organizational and/or analytical skills. Demonstrate confused and poorly organized assessment of findings and limited presentation of research work.				
	Fail Evidence of poor or inadequate understanding and grasp of the subject matter such that most of the learning outcomes are not attained. Poor critique and knowledge of relevant literature and identification of research hypothesis. Badly designed scientific approach to test research hypothesis. Show little evidence of appropriate organizational and/or analytical skills. Demonstrate incorrect interpretation and assessment of findings and poor presentation of research work.					
Course Type	Project-ba	sed course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Reading	/ Self study	at least 120 hours dissertation or project		120	
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)	
	Oral pres	entation	15 minutes (Plus 5 r questions and answer		20	
	Research	n report	Mid-term written es (20%), Written report words (excluding fig references) (80%)	6000-7000	80	
Course Website	http://www	v.biosch.hku.hk/ecology/lsc/				
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dissertation or project. Recommended reading may be assigned.

BIOL3992 Directed stud	lies in food	& nutritional science (6 credits)	Acaden	nic Year	2014	
Offering Department	Biologica	l Sciences	Quota		50	
Course Co-ordinator	Dr M Sur	n, Biological Sciences (meisun@hku.hk)				
eachers Involved	Supervis	ors and examiners from academic staff, E	Biological Sciences			
Course Objectives		rse aims to provide a stimulating capst duates to integrate and apply their knowledge.			l Science Majo	
Course Contents & Topics	student's commitm the cours various r	ne directed study can be a review of literature on a specific topic, or a lab or field study that enhances the udent's understanding of the topic in the field of food & nutritional science. The student should obtain the immitment of a supervisor in the area of the dissertation topic before submitting the registration form for e course (available from the General Office of School of Biological Sciences). Supervisor will introduce urious methodologies/techniques and guide students to completion of the dissertation. Teaching will be formal and students will gain knowledge through discussion and feedback from their supervisors.				
ourse Learning Outcomes	S On succe	essful completion of this course, students	should be able to:			
	2. have a 3. apply s	 acquaint with the process of science. have a better understanding of the nature of food & nutritional science. apply scientific methods to address important issues in various biological disciplines. develop the key intellectual skills that will be valubale for all scientific studies. 				
Pre-requisites and Co-requisites and mpermissible combination	Food & N	at least 24 credits of advanced level biol lutritional Science Major. stone course is for Food & Nutritional Sci	,	XXX or B	IOL4XXX) in th	
Offer in 2014 - 2015	N		Examin	ation		
offer in 2015 - 2016	Υ					
ourse Grade	A+ to F					
rade Descriptors	A	A Work displaying a high level of scholarship and originality; virtually flawless presentation with excellent introduction to dissertation topic, showing a thorough grasp of the topic from background reading and analysis; clear statement of the objectives of the research; comprehensive exploration of the topic, personal synthesis of the issues with detailed support from the literature; comprehensive and up-to-date references integrated into argument or logical reasoning; critical evaluations of the main points or problems and their solutions and implications; thought-provoking discussions; accurate summary. All chapters/paragraphs are well-connected and presented logically with clarity of goals, demonstrating excellent organizational, rhetorical and presentational skills. The length of the dissertation meet the specified requirements. All other aspects of the dissertation conform to a high academic standard.				
	В	Work showing some evidence of originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; demonstrating substantial understanding of fundamental concepts of the field of study; adequate grasp of the topic from background reading and analysis; a systematic exploration of the topic which may include an attempt at critical comment or appraisal; regular support provided from the literature; comprehensive and up-to-date references included; main points fully elaborated; summary given in the final chapter/paragraphs; communicating information and ideas clearly and fluently, demonstrating good organizational, rhetorical and presentational skills. The length of the dissertation meet the specified requirements. Most aspects conform to a high academic standard.				
	С	Work showing no evidence of originality and insight, but the presentation demonstrated adequate understanding and comprehension of most aspects of the dissertation topic; essential topic materials have been read and acknowledged; the main points presented in logically sequential paragraphs; reasonably balanced discussion of the major issues; acceptable interpretation of the topic, some explanation, illustration and support provided from the literature; summary given in the final chapter/paragraphs; most presentation details met (front page, margin, legibility, citations correctly reported and tabulated, etc.); few typos or grammatical errors; Most aspects conform to an acceptable academic standard.				
	D	Demonstrating superficial or partial or faulty understanding of the fundamental concepts of the field of study; showing the bare minimum of information, poorly digested and not very well organized in presentation; irrelevant material; showing no evidence of critical thinking; arguments undeveloped or inappropriate or unsupported; lack of clarity or structure in communicating information or ideas. dissertation topic not fully covered; discussion too brief or just repeating the data or findings; overuse quotations with little explanation; insufficient support from literature; reading not well incorporated into the text; limited acknowledgements and light bibliography; some major points missed. Minimum conform to an acceptable academic standard.				
	Fail	The dissertation topic was not covered accepunderstanding fundamental concepts; mate information or ideas; unreflective; incoherent a reading (no acknowledgements or bibliograph basic requirements of the course. The written was considered to the course of the course.	rials largely irrelevant; incomplete or rgument; complete misinterpretation of t y); structure confused or not discernible	confusing he topic or o	communication of lata; no evidence o	
Course Type	Project-b	ased course				
ourse Teaching	Activitie	9S	Details		No. of Hour	
Learning Activities	Reading	/ Self study	at least 120 hours on to dissertation or project	ne	12	
ssessment Methods nd Weighting	Method	s	Details		eighting in fina ourse grade (%	
	Oral pre	sentation	15 minutes (Plus 5 minutes questions and answers).	for	2	
	Researc	ch report	Written report 6000-8000 wo (excluding figures and references).	rds	81	
Course Website	http://mo	odle.hku.hl/				
Additional Course nformation	methods	meetings between the supervisor and , and on how to think and write scientil on or project. Recommended reading ma	ically. Students should spend a			

BIOL3993 Directed stud credits)	ies in Mole	cular biology & biotechnolog	y (6	Academic Year	2014	
Offering Department	Biologica	I Sciences		Quota	50	
Course Co-ordinator	Dr M Sun	, Biological Sciences (meisun@hku	.hk)			
Feachers Involved	Superviso	ors and examiners from academic st	aff, Biological Sciences			
Course Objectives		rse aims to provide a stimulating c dergraduates to integrate and apply				
Course Contents & Topics	student's obtain the form for introduce	The directed study can be a review of literature on a specific topic, or a lab or field study that enhances the student's understanding of the topic in the field of molecular biology & biotechnology. The student should obtain the commitment of a supervisor in the area of the dissertation topic before submitting the registration form for the course (available from the General Office of School of Biological Sciences). Supervisor will introduce various methodologies/techniques and guide students to completion of the dissertation. Teaching will be informal and students will gain knowledge through discussion and feedback from their supervisors.				
Course Learning Outcomes	1. acquai 2. have a 3. apply s	On successful completion of this course, students should be able to: 1. acquaint with the process of science. 2. have a better understanding of the nature of molecular biology & biotechnology. 3. apply scientific methods to address important issues in various biological disciplines. 4. develop the key intellectual skills that will be valubale for all scientific studies.				
Pre-requisites and Co-requisites and mpermissible combination	Molecula	at least 24 credits of advanced leve r Biology & Biotechnology Major. stone course is for Molecular Biology	-		BIOL4XXX) in the	
Offer in 2014 - 2015	N					
Offer in 2015 - 2016	Υ	(
Course Grade	A+ to F					
Grade Descriptors	A	Work displaying a high level of scholarship and originality; virtually flawless presentation with excellent introduction to dissertation topic, showing a thorough grasp of the topic from background reading and analysis; clear statement of the objectives of the research; comprehensive exploration of the topic, personal synthesis of the issues with detailed support from the literature; comprehensive and up-to-date references integrated into argument or logical reasoning; critical evaluations of the main points or problems and their solutions and implications; thought-provoking discussions; accurate summary. All chapters/paragraphs are well-connected and presented logically with clarity of goals, demonstrating excellent organizational, rhetorical and presentational skills. The length of the dissertation meet the specified requirements. All other aspects of the dissertation conform to a high academic standard.				
	В	Work showing some evidence of originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; demonstrating substantial understanding of fundamental concepts of the field of study; adequate grasp of the topic from background reading and analysis; a systematic exploration of the topic which may include an attempt at critical comment or appraisal; regular support provided from the literature; comprehensive and up-to-date references included; main points fully elaborated; summary given in the final chapter/paragraphs; communicating information and ideas clearly and fluently, demonstrating good organizational, rhetorical and presentational skills. The length of the dissertation meet the specified requirements. Most aspects conform to a high academic standard				
	С	Work showing no evidence of originality and insight, but the presentation demonstrated adequate understanding and comprehension of most aspects of the dissertation topic; essential topic materials have been read and acknowledged; the main points presented in logically sequential paragraphs; reasonably balanced discussion of the major issues; acceptable interpretation of the topic, some explanation, illustration and support provided from the literature; summary given in the final chapter/paragraphs; most presentation details met (front page, margin, legibility, citations correctly reported and tabulated, etc.); few typos or grammatical errors; Most aspects conform to an acceptable academic standard.				
	D	Demonstrating superficial or partial or faulty understanding of the fundamental concepts of the field of study; showing the bare minimum of information, poorly digested and not very well organized in presentation; irrelevant material; showing no evidence of critical thinking; arguments undeveloped or inappropriate or unsupported; lack of clarity or structure in communicating information or ideas. dissertation topic not fully covered; discussion too brief or just repeating the data or findings; overuse quotations with little explanation; insufficient support from literature; reading not well incorporated into the text; limited acknowledgements and light bibliography; some major points missed. Minimum conform to an acceptable academic standard.				
	Fail	The dissertation topic was not covered understanding fundamental concepts; information or ideas; unreflective; incohe reading (no acknowledgements or biblic basic requirements of the course. The w	materials largely irrelevant; inco erent argument; complete misinterprigraphy); structure confused or not	mplete or confusing etation of the topic o discernible; Fail to m	g communication of r data; no evidence o	
Course Type	Project-b	ased course				
Course Teaching	Activitie	98	Details		No. of Hour	
& Learning Activities	Reading	/ Self study	at least 120 hour dissertation or project		12	
Assessment Methods and Weighting	Methods	S	Details		Weighting in fina course grade (%	
	Oral pres	sentation	15 minutes (Plus 5 questions and answe		2	
	Researc	Research report 60 (excluding figureferences).			8	
Course Website	http://mod	odle.hku.hk/				
Additional Course Information	methods,	meetings between the supervisor and on how to think and write so on or project. Recommended readin	cientifically. Students should			

BIOL3994 Directed stud	dies in biolo	gical sciences (6 credits)	Academic Yea	r 2014			
Offering Department	Biological	Sciences	Quota	50			
Course Co-ordinator	Dr M Sun	, Biological Sciences (meisun@hku.hk)					
Teachers Involved	Superviso	ors and examiners from academic staff, E	Biological Sciences				
Course Objectives		his course aims to provide a stimulating capstone experience for all Biological Sciences Major ndergraduates to integrate and apply their knowledge and skills obtained from the Major.					
Course Contents & Topics	student's commitme course (a methodole	The directed study can be a review of literature on a specific topic, or a lab or field study that enhances the student's understanding of the topic in the field of biological sciences. The student should obtain the commitment of a supervisor in the area of the dissertation topic before submitting the registration form for the course (available from the General Office of School of Biological Sciences). Supervisor will introduce various nethodologies/techniques and guide students to completion of the dissertation. Teaching will be informal and students will gain knowledge through discussion and feedback from their supervisors.					
Course Learning Outcome	1. acquair 2. have a 3. apply s	On successful completion of this course, students should be able to: 1. acquaint with the process of science. 2. have a better understanding of the nature of biological sciences. 3. apply scientific methods to address important issues in various biological disciplines. 4. develop the key intellectual skills that will be valubale for all scientific studies.					
Pre-requisites (and Co-requisites and Impermissible combinatior	Biological	t least 24 credits of advanced level biol Sciences Major. tone course is for Biological Sciences Ma	,	or BIOL4XXX) in the			
Offer in 2014 - 2015	Y Yea	Year long Examination No Ex					
Offer in 2015 - 2016	Υ		I	'			
Course Grade	A+ to F						
Grade Descriptors	A	Work displaying a high level of scholarship an dissertation topic, showing a thorough grasp or objectives of the research; comprehensive esupport from the literature; comprehensive arcritical evaluations of the main points or proble accurate summary. All chapters/paragraphs demonstrating excellent organizational, rhetor specified requirements. All other aspects of the	f the Topic from background reading and analy xploration of the topic, personal synthesis of id up-to-date references integrated into argun ams and their solutions and implications; thougare well-connected and presented logical ical and presentational skills. The length of	sis; clear statement of the the issues with detailed nent or logical reasoning; tht-provoking discussions; y with clarity of goals, the dissertation meet the			
	В	Work showing some evidence of originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; demonstrating substantial understanding of fundamental concepts of the field of study; adequate grasp of the topic from background reading and analysis; a systematic exploration of the topic which may include an attempt at critical comment or appraisal; regular support provided from the literature; comprehensive and up-to-date references included; main points fully elaborated; summary given in the final chapter/paragraphs; communicating information and ideas clearly and fluently, demonstrating good organizational, rhetorical and presentational skills. The length of the dissertation meet the specified requirements. Most aspects conform to a high academic standard.					
	С	Work showing no evidence of originality and insight, but the presentation demonstrated adequate understanding and comprehension of most aspects of the dissertation topic; essential topic materials have been read and acknowledged; the main points presented in logically sequential paragraphs; reasonably balanced discussion of the major issues; acceptable interpretation of the topic, some explanation, illustration and support provided from the literature; summary given in the final chapter/paragraphs; most presentation details met (front page, margin, legibility, citations correctly reported and tabulated, etc.); few typos or grammatical errors; Most aspects conform to an acceptable academic standard.					
	D	Demonstrating superficial or partial or faulty understanding of the fundamental concepts of the field of study; showing the bare minimum of information, poorly digested and not very well organized in presentation; irrelevant material; showing no evidence of critical thinking; arguments undeveloped or inappropriate or unsupported; lack of clarity or structure in communicating information or ideas. dissertation topic not fully covered; discussion too brief or just repeating the data or findings; overuse quotations with little explanation; insufficient support from literature; reading not well incorporated into the text; limited acknowledgements and light bibliography; some major points missed. Minimum conform to an acceptable academic standard.					
	Fail	The dissertation topic was not covered accep understanding fundamental concepts; mater information or ideas; unreflective; incoherent a reading (no acknowledgements or bibliograph basic requirements of the course. The written was	rials largely irrelevant; incomplete or confurgument; complete misinterpretation of the top y); structure confused or not discernible; Fail	using communication of ic or data; no evidence of			
Course Type	Project-ba	ased course					
Course Teaching	Activitie	s	Details	No. of Hours			
& Learning Activities	Reading	/ Self study	at least 120 hours on the dissertation or project	120			
Assessment Methods and Weighting	Methods	3	Details	Weighting in fina course grade (%)			
	Oral pres	sentation	15 minutes (Plus 5 minutes for questions and answers).	20			
	Research	n report	Written report 6000-8000 words (excluding figures and references).	80			
Course Website	http://mod	odle.hku.hk/					
Additional Course Information	methods,	meetings between the supervisor and and on how to think and write scientifor or project. Recommended reading ma	ically. Students should spend at lea				

BIOL4201 Public health nut		-		Academic Year	2014	
Offering Department	Biological			Quota	90	
Course Co-ordinator		Van, Biological Sciences (jmfwan@hku.h	nk)			
Teachers Involved	Dr J M F V	Van, Biological Science				
Course Objectives	human he	Public health nutrition unites social sciences and biomedical sciences in preventing disease and improving numan health through programs aimed at enhancing good nutritional practices. This course presents a proad overview of the professional practice and essential skills required of a public health nutritionist. Public health nutrition: overview, nature and identification of problems, objectives of intervention				
Course Contents & Topics	Public health nutrition: overview, nature and identification of problems, objectives of intervention programs. The epidemiological study of diet: disease associations. Development of dietary guidelines Undernutrition and overnutrition: definitions, prevalence, public health consequences, and interventions Epidemiology, public health consequences, and elimination of vitamin and mineral deficiencies. Disease prevention. Educating the public for healthy eating and food safety.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Have a broad knowledge of the scope and methodologies of public health nutrition. 2. Have a clear technical understanding of a range of selected examples of public health nutrition cases ir less-developed and developed countries. 3. Be able to formulate recommendations for action for nutritional interventions at the community level. 4. Understand the impact of socio-cultural factors on community food choices and consequently on health outcomes.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	Pass in BIOL3201 Food chemistry or BIOL3202 Nutritional biochemistry				
Offer in 2014 - 2015	Y 2nd	2nd sem Examination May				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective laboratory/fieldwork skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Substantial grasp of the subject. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective laboratory /fieldwork skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. General but incomplete grasp of the subject. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective laboratory / fieldwork skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Partial but limited grasp of the subject, retention of some relevant information of the subject. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab / fieldwork skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Little or no grasp of the knowledge and understanding of the subject. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective laboratory / fieldwork skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Tutorials		30 hours student i report, & 12 I tutorials/presentation	hours of	42	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		Veighting in fina course grade (%)	
	Assignments				30	
	Examinat	ion			70	
Required/recommended reading and online materials		alth Nutrition (The Nutrition Society Textb r, BM Margetts, JM Kearney, L Arab (Ed				
Course Website	http://moo	dle.hku.hk/				
Additional Course Information	This cours	e will be offered subject to a minimum er	rollment number and	d availability of to	achore	

BIOL4204 Diet, brain function and behavior (6 credits) Academic Year 2014	
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Offering Department	Biological S	Sciences		Quota	40	
Course Co-ordinator	Dr E T S Li	E T S Li, Biological Sciences (etsli @hku.hk) E T S Li, Biological Sciences				
Teachers Involved	Dr E T S Li	, Biological Sciences				
Course Objectives		o highlight the impact of nutrient provision on brain structure and function, and to discuss various effect function and diet on mental function and behaviour.				
Course Contents & Topics	Fundamentals of the central nervous system; Nutrition & brain development; Diet, learning & memory function; Dietary CNS stimulants; Neurotransmitters, drugs & behaviour; Physiological and socio-cultural determinants of dietary behaviour.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the basic structure and functions of the brain and how nutrition influences its development. 2. Be able to explain the consequences of nutrient inadequacy on cognition. 3. Understand the differences between bioactive food ingredients and drugs. 4. Be able to critically evaluate and interpret the internal and external cues that determine dietary behaviour.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIC	DL3204 Nutrition and the life cycle or a	Iready enrolled in this	course		
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ	(
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject matter covered. Show exceptional ability on knowledge integration, problem identification and solving. Show outstanding ability to critically analyze and interpret scientific data and draw appropriate conclusions. Demonstrate highly effective presentation / writing skills.					
	B Demonstrate substantial grasp of the subject matter covered. Show full ability on knowledge integration, problem identification and solving. Show reasonable ability to critically analyze and interpret scientific data and draw appropriate conclusions. Demonstrate effective presentation / writing skills.					
	C Demonstrate general but incomplete grasp of the subject matter covered. Might show misunderstanding of the materials. Show some ability on knowledge integration, problem identification and solving. Show some ability to analyze and interpret scientific data and draw proper conclusions. Demonstrate adequate organization / writing skills.					
	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Misunderstanding of the materials is not uncommon. Show limited ability on knowledge integration, problem identification and solving. Use elementary approaches to analyze and interpret scientific data and draw sometimes erroneous conclusions. Demonstrate basic organization / writing skills.					
	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack o coherent and logical thinking, and minimal competence in problem solving. Fail to integrate information and identify problems. Seriously deficient in ability to analyze and interpret scientific data and draw conclusions. Demonstrate poor organization / writing skills.					
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials		tutorials/group discussions/semina	rs	12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%	
	Assignme	nts			30	
	Examination				70	
Required/recommended reading and online materials	Press, 2003 Lieberman Nutritional	Copper J. R., Bloom F. E. & Roth R. H.: The Biochemical Basis of Neuropharmacology. Oxford University Press, 2003 Lieberman H. R., Kanarek R. B. & Prasad C.: Nutritional Neuroscience. CRC Press, 2005 Nutritional Neuroscience (Journal) Physiology and Behavior (Journal)				
Course Website	http://mood	lle.hku.hk/				

BIOL4205 Food processin	g and engineering (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota 60			
Course Co-ordinator	Dr J C Y Lee, Biological Sciences (jettylee @hku.hk)				
Teachers Involved	Dr J C Y Lee, Biological Sciences Prof N P Shah, Biological Sciences				
Course Objectives	To provide students with basic principles and methodologies of food processing and preservation technology. To cover key engineering principles relevant to the food industry. Students will gain hands-on experience with selected food processing and preservation techniques.				
Course Contents & Topics	Food processing is a multidisciplinary field combining applied physical sciences with knowledge of product properties and requirements. This course introduces the technical knowledge required to implement cost effective production and commercialization of food products and services. The design and development of processes, equipment and machinery used to convert raw agricultural materials and ingredients into safe				

	principles	nt, and nutritious consumer food proc and applications of methods in food p ose for high and low temperature proces	processing and preservation. Tec	chniques discussed will		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand basic principles of food processing methods and preservation technology. 2. Be able to apply their knowledge and practical skills to process and develop food products. 3. Demonstrate in-depth understanding of selected methods and problems in food processing and preservation.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	Pass in BIOL3201 Food chemistry				
Offer in 2014 - 2015	Y 1st	sem	Examination	on Dec		
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A	Demonstrate thorough grasp of the subject may the changes that take place in variety of for advanced techniques and equipment for a designing, producing and evaluating solutions and techniques and analysis of data and result	od during preparation, processing and s variety of food-specific purposes. Demo of excellent quality for specific food purp	storage. Identifies and uses onstrates advance skills in oses. Critically use lab skills		
	В	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities of the changes that take place in variety of food during preparation, processing and storage. Identifies and uses techniques and equipment for a variety of food-specific purposes. Demonstrates high-level skills in designing, producing and evaluating solutions of high quality for specific food purposes. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions.				
	C Demonstrate general but incomplete grasp of the subject matter covered. Show adequate evidence of analytical and critical abilities and logical thinking of the changes that take place in variety of food during preparation, processing and storage. Identifies and uses appropriate techniques and equipment for a variety of food-specific purposes. Demonstrates adequate skills in designing, producing and evaluating solutions of sound quality for specific food purposes. Use lab skills and techniques and analysis of data and results to draw moderately appropriate conclusions.					
	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Show some evidence of coherent and logical thinking of the changes that take place in variety of food during preparation, processing and storage. Identifies and uses basic techniques and equipment for a variety of food-specific purposes. Demonstrates basic skills in designing, producing and evaluating solutions for specific food purposes. Use lab skills and techniques and analysis of data and results to draw appropriate conclusions occasionally.					
	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking of he changes that take place in variety of food during preparation, processing and storage. Identifies with guidance factors and uses some appropriate techniques and equipment for a limited range of food-specific purposes. With guidance, demonstrates limited skills in designing, producing and evaluating solutions for specific food purposes. Use lab skills and techniques and analysis of data and results ineffectively, leading generally to inappropriate and usually erroneous conclusions.					
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laborato	ry	laboratory/field trip/seminar	24		
	Tutorials			6		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods	;	Details	Weighting in final course grade (%)		
	Examina	tion		70		
	Laborato	ry reports		30		
Required/recommended reading and online materials		cessing Technology-Principles & Practic ations in Food Processing - 2nd ed. R.L				
Course Website	http://mod	odle.hku.hk/				
Additional Course Information	This cours	se will be offered subject to a minimum	enrollment number and availability	of teachers.		

BIOL4207 Meat and dairy	sciences (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota	50		
Course Co-ordinator	Prof N P Shah, Biological Sciences (npshah@hku.hk)				
Teachers Involved	Prof N P Shah, Biological Science Dr J C Y Lee, Biological Sciences				
Course Objectives	To give students a broad understanding of modern practice and technologies used in meat and dairy production, processing and marketing.				
Course Contents & Topics	Principles of animal nutrition and feed formulation; g slaughter and carcass inspection; meat preservation and emphasizing fermented products such as cheese and you product marketing.	d safety; sensory quality of meat	. Dairy processing		
Course Learning Outcomes	On successful completion of this course, students should	d be able to:			
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	2. Demorused in p	 Understand modern practices in meat and dairy production. Demonstrate a knowledge and understanding of meat and dairy sensory quality, and the technologies used in processing, preservation or improvement of meat and dairy products. Demonstrate knowledge of selected issues related to meat and dairy safety. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL3201 Food chemistry				
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Υ				<u>'</u>	
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use lab skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective team-based organizational and presentational skills.					
	В	Demonstrate substantial grasp of the su logical thinking with some evidence of techniques and analysis of data and red Demonstrate effective team-based organ	f competence in profess esults to draw generally	sional-level problem solvir appropriate conclusions t	ng. Use lab skills and	
	С					
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Show some evidence of coherent and logical thinking, but lacking competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw sometimes appropriate but often erroneous conclusions to real-world problems. Demonstrate team-based organizational and presentational skills of limited effectiveness.					
	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking, and minimal competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results ineffectively, leading generally to inappropriate and usually erroneous conclusions to real-world problems. Demonstrate ineffectiveness team-based organizational and presentational skills.					
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	.s	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laboratory				24	
	Tutorials				6	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Examina	tion			80	
	Laboratory reports				20	
Required/recommended reading and online materials		Meat Science. RA Lawrie (CRC Prescessing and Quality Assurance. RC		N Shah (Eds) (Black	well, 2008)	
Course Website	http://mod	odle.hku.hk/				

Course Co-ordinator Dr M F Wang, Biological Sciences (mfwang@hku.hk) Teachers Involved Dr M F Wang, Biological Sciences Course Objectives To provide a fundamental understanding of the rapidly emerging functional food/nutraceutical an emphasis on the history, regulation, chemical basis and quality control of healthy ingred and their effects on human health. Course Contents & Topics Concept, history and global regulation of functional foods and nutraceuticals; classification foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, pigments and dietary fibers as healthy food ingredients; health benefits of dietary phenoi phytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spherbs for health; quality control and assurance of functional foods and nutraceuticals. Course Learning Outcomes On successful completion of this course, students should be able to: 1. Understand the definition and global regulation of functional foods and nutraceuticals. 2. Have substantial chemical knowledge of functional food and nutraceutical products. 3. Be able to describe examples of functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturin products. Pre-requisites (and Co-requisites and	BIOL4209 Functional food	s (6 credits)	Academic Year	2014			
Teachers Involved Dr M F Wang, Biological Sciences To provide a fundamental understanding of the rapidly emerging functional food/nutraceutical an emphasis on the history, regulation, chemical basis and quality control of healthy ingred and their effects on human health. Course Contents & Topics Concept, history and global regulation of functional foods and nutraceuticals; classification foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, pigments and dietary fibers as healthy food ingredients; health benefits of dietary pheno phytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spherbs for health; quality control and assurance of functional foods and nutraceuticals. On successful completion of this course, students should be able to: 1. Understand the definition and global regulation of functional foods and nutraceutical products. 2. Have substantial chemical knowledge of functional food and nutraceutical products. 3. Be able to describe examples of functional foods and interpret critically their claimed healt 4. Demonstrate understanding of the current functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturin products. Pre-requisites (and Co-requisites and	Offering Department	Biological Sciences	Quota	40			
Course Objectives To provide a fundamental understanding of the rapidly emerging functional food/nutraceutical an emphasis on the history, regulation, chemical basis and quality control of healthy ingred and their effects on human health. Course Contents & Topics Concept, history and global regulation of functional foods and nutraceuticals; classification foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, pigments and dietary fibers as healthy food ingredients; health benefits of dietary pheno phytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spherbs for health; quality control and assurance of functional foods and nutraceuticals. On successful completion of this course, students should be able to: 1. Understand the definition and global regulation of functional foods and nutraceutical products. 2. Have substantial chemical knowledge of functional food and nutraceutical products. 3. Be able to describe examples of functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturing products. Pre-requisites (and Co-requisites and	Course Co-ordinator	Dr M F Wang, Biological Sciences (mfwang@hku.hk)					
an emphasis on the history, regulation, chemical basis and quality control of healthy ingred and their effects on human health. Course Contents & Topics Concept, history and global regulation of functional foods and nutraceuticals; classification foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, pigments and dietary fibers as healthy food ingredients; health benefits of dietary phenoiphytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spherbs for health; quality control and assurance of functional foods and nutraceuticals. On successful completion of this course, students should be able to: 1. Understand the definition and global regulation of functional foods and nutraceutical products. 3. Be able to describe examples of functional food and nutraceutical products. 4. Demonstrate understanding of the current functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturing products. Pre-requisites (and Co-requisites and	Teachers Involved	Dr M F Wang, Biological Sciences					
foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, pigments and dietary fibers as healthy food ingredients; health benefits of dietary phenoiphytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spherbs for health; quality control and assurance of functional foods and nutraceuticals. Course Learning Outcomes On successful completion of this course, students should be able to: 1. Understand the definition and global regulation of functional foods and nutraceuticals. 2. Have substantial chemical knowledge of functional food and nutraceutical products. 3. Be able to describe examples of functional food and nutraceutical industry. 4. Demonstrate understanding of the current functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturing products. Pre-requisites (and Co-requisites and	Course Objectives	To provide a fundamental understanding of the rapidly emerging functional food/nutraceutical industry with an emphasis on the history, regulation, chemical basis and quality control of healthy ingredients/products and their effects on human health.					
1. Understand the definition and global regulation of functional foods and nutraceuticals. 2. Have substantial chemical knowledge of functional food and nutraceutical products. 3. Be able to describe examples of functional foods and interpret critically their claimed healt 4. Demonstrate understanding of the current functional food and nutraceutical industry. 5. Understand major techniques and technologies for quality control and manufacturin products. Pre-requisites (and Co-requisites and	Course Contents & Topics	Concept, history and global regulation of functional foods and nutraceuticals; classification of functional foods and nutraceuticals based on their chemical structures; unsaturated fatty acids, proteins, food pigments and dietary fibers as healthy food ingredients; health benefits of dietary phenolics, terpenes, phytosterols and sulphur-containing compounds; probiotics and prebiotics; small berries, spices, teas and herbs for health; quality control and assurance of functional foods and nutraceuticals.					
(and Co-requisites and	Course Learning Outcomes	Understand the definition and global regulation of functional food Have substantial chemical knowledge of functional food and nut Be able to describe examples of functional foods and interpret or Demonstrate understanding of the current functional food and nut Understand major techniques and technologies for quality or	s and nutraceuticals. aceutical products. itically their claimed houtraceutical industry.				
Impermissible combination)	Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL3201 Food chemistry or BIOL3202 Nutritional biochem	nistry				

Offer in 2014 - 2015	Y 1s	t sem		Examination	Dec				
Offer in 2015 - 2016	Υ								
Course Grade	A+ to F	N+ to F							
Grade Descriptors	A	Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use knowledge to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective teambased organizational and presentational skills.							
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use knowledge to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.								
	С	Demonstrate general but incomplete grasp of the subject matter covered. Show some evidence of analytical and critical abilities and logical thinking with limited competence in professional-level problem solving. Use knowledge to draw moderately appropriate but sometimes erroneous conclusions to real-world problems. Demonstrate moderately effective team-based organizational and presentational skills.							
	D	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject matter covered. Show some evidence of coherent and logical thinking, but lacking competence in professional-level problem solving. Use knowledge to draw sometimes appropriate but often erroneous conclusions to real-world problems. Demonstrate team-based organizational and presentational skills of limited effectiveness.							
	Fail Demonstrate little or no grasp, with retention of little relevant information, of the subject matter covered. Show lack of coherent and logical thinking, and minimal competence in professional-level problem solving. Use knowledge ineffectively, leading generally to inappropriate and usually erroneous conclusions to real-world problems. Demonstrate ineffectiveness team-based organizational and presentational skills.								
Course Type	Lecture-b	pased course							
Course Teaching	Activities		Details		No. of Hours				
& Learning Activities	Lectures				36				
	Tutorials		tutorials/seminars		12				
	Reading / Self study				100				
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)				
	Assignm	nents			30				
	Examination				70				
Required/recommended		R. E. C. Wildman: Handbook of Nutraceuticals and Functional Foods (CRC Press, 2007) C. M. Hasler: Regulation of Functional Foods and Nutraceuticals: a Global Perspective (IFT Press, 2005)							
reading and online materials					http://moodle.hku.hk/				
reading and online materials Course Website	http://mo	odle.hku.hk/							

BIOL4210 Food product de	evelopmer	t (6 credits)	A	Academic Year	2014		
Offering Department	Biological	Sciences	C	Quota	40		
Course Co-ordinator	Dr M F W	Nang, Biological Sciences (mfwang@hku.hk)					
Teachers Involved	Dr M F W	ng, Biological Sciences					
Course Objectives		To introduce the key concepts and techniques used in food product development. To provide small grou experience in the design, development and production of a new food product.					
Course Contents & Topics	prototype	History and future of the food industry; industrial product development process; idea generation and prototype development for new food products; quality management and legal protection; marketing strategies; food labeling; food package design; new product development for different food industries.					
Course Learning Outcomes	1. Unders 2. Know t 3. Demon 4. Have p	sful completion of this course, students and the food product development cycle e key steps in new product development trate enhanced insight and understandiofessional level practical experience in e main characteristics of different secto	e. nt. ing of current and futu new product developn	nent.	od industry.		
Pre-requisites and Co-requisites and mpermissible combination)	Pass in B	DL3203 Food microbiology or BIOL4209	5 Food processing and	d engineering			
Offer in 2014 - 2015	Y 1st	sem	E	Examination	Dec		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough grasp of the subject matter covered. Show strong analytical and critical abilities and logical thinking, with evidence of creative ability and competence in professional-level problem solving. Critically use lab skills and techniques and analysis of data and results to draw appropriate and insightful conclusions to real-world problems. Demonstrate highly effective team-based organizational and presentational skills.						
	B Demonstrate substantial grasp of the subject matter covered. Show evidence of analytical and critical abilities and logical thinking with some evidence of competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw generally appropriate conclusions to real-world problems. Demonstrate effective team-based organizational and presentational skills.						
	C Demonstrate general but incomplete grasp of the subject matter covered. Show some evidence of analytical and critical abilities and logical thinking with limited competence in professional-level problem solving. Use lab skills and						

	techniques and analysis of data and results to draw moderately appropriate but sometimes erroneous conclusions real-world problems. Demonstrate moderately effective team-based organizational and presentational skills.					
	D	Show some evidence of coherent and logical thinking, but lacking competence in professional-level problem solving. Use lab skills and techniques and analysis of data and results to draw sometimes appropriate but often erroneous conclusions to real-world problems. Demonstrate team-based organizational and presentational skills of limited effectiveness.				
	Fail					
Course Type	Laboratory	and workshop course				
Course Teaching & Learning Activities	Activities	;	Details	No. of Hours		
	Laboratory			48		
	Group work		80-100 hours group project work	100		
	Tutorials		10 lectures + 12 tutorials	22		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments		assessment of group product development project including inclass presentation	80		
	Test			20		
Required/recommended reading and online materials	E. Graf an	A. L. Brody and J. B. Lord: Developing New Food Products for a Changing Marketplace (CRC Press, 2007) E. Graf and I. S. Saguy: Food Product Development (Avi Books, 1991) G. W. Fuller: New Food Product Development (CRC Press, 2005)				
Course Website	http://moo	dle.hku.hk/				
Additional Course Information		nis course will be offered subject to a minimum enrollment number and availability of teachers.				

BIOL4301 Fish and fisherie	es (6 credit	s)	Academic Year	2014
Offering Department	Biological	Sciences	Quota	30
Course Co-ordinator	Prof Y J Sa	adovy, Biological Sciences (yjsadovy@hku.hk)		
Teachers Involved	Prof Y J Sa	adovy, Biological Sciences		
Course Objectives	and abiotic interactions - to provide to fishery species to cover	int students with the principles governing interrelation c aspects of their environment for an understanding s. e an understanding of how species diversity and selec management challenges, sustainable supply of seaf the theoretical and practical aspects of marine fish on using local, regional and global examples	of population dynamics ted aspects of their life hood, and the conserva-	and multispecienistory are relevation of threatene
Course Contents & Topics	interactions the world's regional as relationship	n to course: phylogenetic, biological and ecological s in marine and freshwater fish assemblages. Fishery s capture fisheries; fish stock assessment and fish nd global examples. The roles of mariculture and to to capture fisheries. Fishery management and fish production; ethics of fish research and exploitation;	theory; how do fisherien nery management pract capture fisheries for se conservation. Conclusio	es work? Status tices using loca afood supply an n: fish biodiversi
Course Learning Outcomes	 Underst factors. Apprecia species as Underst manageme Apprecia sustainabil 	ate the mutual dependency of humans with fished	o phylogenetic, ecologics of human activities or fisheries assessment,	n fish species ar
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BI	OL3301 Marine biology or BIOL3303 Conservation eco	ology	
Offer in 2014 - 2015	Y 2nd	sem	Examination	May
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extens course learning outcomes. Show strong analytical and critical at thought, ability to integrate and synthesize information, and abil	pilities and logical thinking, with	h evidence of origina

	В	Demonstrate substantial command of a broat the course learning outcomes. Show evidend materials and ability to apply knowledge presentational skills. Evidence of clear attention	ce of analytical and critical abilities and logic to familiar and some unfamiliar situations	cal thinking, integration of
	С	Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Appl attention to thoughtful and reflective thinking.	analytical and critical abilities and logical thin	nking, and ability to apply
	D	Demonstrate partial but limited command of loutcomes. Show evidence of some coherent little attempt at integration. Show limited abilit presentational skills. Lack of attention to though	and logical thinking, but with limited analytically to apply knowledge to solve problems. App	al and critical abilities and
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems. Organization ar	ies, logical and coherent thinking. Show very	little or no ability to apply
Course Type	Lecture-ba	sed course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Field work		Field, laboratory, practical and tutorials	36
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts		30
	Examination			60
	Test			10
Required/recommended reading and online materials	Science Ltd	3. & Reynolds J. D. (eds): Handbook of d, 2002) a, B. Collette and D. Facey: The Divers	· ·	·
Course Website	http://www.	biosch.hku.hk/ecology/lsc/		
Additional Course Information	This course	e will be offered subject to a minimum	enrollment number and availability of	f teachers.

BIOL4302 Environmental in	mpact asse	essment (6 credits)	Academic Year	2014
Offering Department	Biological	Sciences	Quota	30
Course Co-ordinator	Prof R S S	Wu, Biological Sciences (rudolfwu@hku.hk)	·	
Teachers Involved		Wu, Biological Sciences ker, Biological Sciences		
Course Objectives		uce the general principles, processes, techniques, c ntal impact assessment (EIA).	urrent practices ar	nd problems of
Course Contents & Topics	legislation. remediatio audit. Con modeling).	d and history of EIA development. Concept of carrying cap Processes in conducting EIA. Risk assessment and man. Cost benefit analysis. Socio-economic perspectives and techniques employed in EIA (e.g. matrix, sequent Modern EIA instruments (environmental liability, environ plication of EIA in environmental management. Case studies	anagement. Mitigato and analysis. Projec nce diagram, causa amental insurance a	ry measures and t monitoring and I chain analysis nd environmenta
Course Learning Outcomes	1. Underst 2. Apply a 3. Evaluate	sful completion of this course, students should be able to: and the operation of EIA systems in Hong Kong and overs variety of techniques in assessing environmental impact. e different options and determine acceptability in environmental reports for small scale projects.		nent.
Pre-requisites (and Co-requisites and Impermissible combination)		DL2103 Biological sciences laboratory course or BIOL2306 XXX course or ENVS3004 Environment, society and econ		tion; and
Offer in 2014 - 2015	Y 2nd	sem	Examination	May
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive k course learning outcomes. Show strong analytical and critical abilities thought, ability to integrate and synthesize information, and ability to familiar and unfamiliar situations. Apply highly effective presentations thoughtful and reflective thinking.	and logical thinking, with apply knowledge to a wid	n evidence of originate de range of complex
	В	Demonstrate substantial command of a broad range of knowledge at the course learning outcomes. Show evidence of analytical and critic material sand ability to apply knowledge to familiar and some presentational skills. Evidence of clear attention to thoughtful and refle	cal abilities and logical thu	inking, integration o
		Freedom - San Carrier - San Ca		

	D	outcomes. Show evidence of some of little attempt at integration. Show limit presentational skills. Lack of attention		nalytical and critical abilities and ns. Apply limited effectiveness in
	Fail	outcomes. Lack of analytical and critic	of command of knowledge and skills required al abilities, logical and coherent thinking. Sho ation and presentational skills are minimally ef	w very little or no ability to apply
Course Type	Lecture	with laboratory component course		
Course Teaching & Learning Activities	Activiti	es	Details	No. of Hours
a Learning Activities	Lecture	S		24
	Field wo	ork	field trip / tutorials	24
	Reading / Self study		student center learning	70
Assessment Methods and Weighting	Method	is	Details	Weighting in final course grade (%)
	Assignn	nents		50
	Examin	ation		50
Required/recommended reading and online materials	Routledo HKSAR Kong: HI	ge, 2005)	Introduction to Environmental Impa dum for Environmental Impact Asse	
Course Website	http://ww	w.biosch.hku.hk/ecology/lsc		
Additional Course Information	The cou	rse will be offered subject to a mini	mum enrollment number and availabi	lity of teachers.

BIOL4303 Animal behavio	our (6 crec	dits)	Academic Year	2014
Offering Department	Biologic	al Sciences	Quota	30
Course Co-ordinator	Dr L Kar	rczmarski, Biological Sciences (leszek@hku.hk)		
Teachers Involved	Dr L Kar	rczmarski, Biological Sciences		
Course Objectives	provides mechan their phy choose	urse teaches students the ways and means of exploris insights into a field of science that investigates ever isms and functions of specific behaviours; the ways in ysical environment and other organisms; how animals mates, reproduce, and care for their young; how comur of an individual affects the structure of a population.	ything animals do, includ which animals interact with find and defend resources	ing the underlying the each other, with a sound predator
Course Contents & Topics	animal the mechan serve? Forganist groups; instance emphas small grobased to behavior will discuthat repralso illu	urse will introduce students to scientific reasoning and behavioural ecology. What causes specisms? How does behaviour develop within the indivisor example; why are some species monogamous while meaning the most complex and effective as the birth of sterile castes, like in bees, be explainized the reproductive success of as many individuals oups like squirrels, would an individual risk its own life to upon ecological and evolutionary principles, students ural ecology and understand the causes, functions, deceived as several classical studies that form the foundation of resents the current concepts which have led to modern strate the links between the recent extraordinary ac with their application in animal conservation.	cific behaviour and what a idual's lifetime and what e others are polygamous? I species, including huma survival strategy. Howeved through an evolving as possible? Why, among to save the rest of the growill learn to think within evelopment, and evolution of this field, as well as more understanding of animal	are the underlyin functions does from the tolive it is to live it is to
Course Learning Outcomes	1. Learn 2. Approbehavior 3. Appro 4. Learn 5. Think	ressful completion of this course, students should be about to appreciate the causes, functions, development, and eciate the complexity of interactions between envirour. The scientific reasoning and methodology in the field of a analytically in terms of behavioural ecology, animal anding of species' behaviour contributes to its conserva	I evolution of animal behat onmental selective press rstanding of animal behav f Animal Behaviour. socio-behavioural comple	ures and anima
Pre-requisites (and Co-requisites and Impermissible combination)	BIOL330	BIOL2306 Ecology and evolution; and pass in one of th 01 Marine biology or BIOL3313 Freshwater ecology or logy of marine mammals		ology or BIOL332
Offer in 2014 - 2015	Y 1:	st sem	Examination	Dec
Offer in 2015 - 2016	N			
Course Grade	A+ to F			
Grade Descriptors	A	Evidence of a thorough grasp of the subject in a broader com reading and excellent use of named examples and case st excellent use of a broad range of fundamental concepts to dra to learn, great abilities of independent work, effective preser	udies. Evidence of independen w insightful and logical conclusi ntation skills with excellent ana	t critical thought with ons. Show eagernes
		Excellent or outstanding work relative to what is required at deg	gree iever.	

		and very good (but not outstanding) abilities and logical argumentation. Good general of conclusions. Work more than sufficient for wha	command of acquired knowledge to draw	
	С	Demonstrate an adequate, but not coherent and limited use of named examples and cas and/or independent; only partial abilities to u conclusions. Fair presentation skills, with m broader concepts. Work sufficient for what is r	se studies. Some abilities of logical critical the lise acquired knowledge and work independ- costly correct argumentation, but limited (or	ninking, but not insightful ently to draw meaningful
	D	Demonstrate some grasp of the subject, but p none) case studies. Insufficient evidence of b not particularly effective presentation skills wit appropriate conclusions. Work barely meets w	ackground reading, limited abilities of critical in the penerally weak logical argumentation and re	ndependent thinking, and
	Fail	No evidence of basic minimum knowledge a and no familiarity with any relevant examples ineffective presentation skills with poor argum reach degree level.	and case studies. Inadequate evidence of	coherent logical thought;
Course Type	Lecture wit	h laboratory component course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Laboratory		including field trips, site visits, interactive practical/visual sessions, classroom debates	32
	Project wo	ork	project work review	8
	Reading /	Self study		60
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts	active participation/continuous assessment	55
	Examinati	on		45
Required/recommended reading and online materials	Publishing Danchin E. Dugatkin L	I. & Giraldeau L.A. The Behavior of A 2005) , Giraldeau L-A. & Cezilly F. Behaviou .A. Principles of Animal Behavior (2nd . & Moore J. (eds). Encyclopedia of Ar	ral Ecology (Oxford University Press edition) (W.W. Norton & Company 2	; 2008) 2009)
Course Website	http://www	.biosch.hku.hk/ecology/lsc		
Additional Course Information		e is offered in alternate year. e will be offered subject to a minimum o	enrollment number and availability of	teachers.

BIOL4401 Medical microb	piology and applied immunology (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	40
Course Co-ordinator	Dr W Y Lui, Biological Sciences (wylui@hku.hk)		
Teachers Involved	Dr W Y Lui, Biological Sciences Prof W W M Lee, Biological Sciences Dr A Yan, Biological Sciences		
Course Objectives	The objective is to provide students the knowledge on the microbiology in biological research, clinical analysis and disease		immunology and
Course Contents & Topics	Basic parameters affecting antigen-antibody interactions Application of antigen-antibody interaction in advanced rese immunohistochemistry and dual Immunofluorescence Principles and application of flow cytometry Techniques in cellular immunology and tumor immunology Microbial pathogens and associated diseases, host immune re resistance, epidemiology and prevention of microbial infections Clinical laboratory analyses in serology, haematology, blo pathology	esponse, antimicrobial ago	ents and multidru
Course Learning Outcomes	On successful completion of this course, students should be all 1. Apply the principles of antigen-antibody interaction in various 2. Demonstrate knowledge on microbial pathogens, mechanis of antibiotic development. 3. Understand the scientific principles of various clinical laborat 4. Promote public attention on control of microbial infection and	s advanced research tech ms for their disease-caus ory analyses.	ing, and principle
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL3403 Immunology		
Offer in 2014 - 2015	Y 2nd sem	Examination	May
Offer in 2015 - 2016	Υ		

Grade Descriptors	A	Demonstrate thorough mastery at an advantearning outcomes. Show strong analytical an and ability to apply knowledge to a wide rantab skills and techniques. Critical use of data effective organizational and presentational sk	d critical abilities and logical thinking ge of complex, familiar and unfamilia and results to draw appropriate and i	with evidence of original thought, ar situations. Apply highly effective
	В	Demonstrate substantial command of a broat learning outcomes. Show evidence of anal knowledge to familiar and some unfamiliar sit results to draw appropriate conclusions. Apply	ytical and critical abilities and logic uations. Apply effective lab skills and	cal thinking, and ability to apply techniques. Correct use of data of
	С	Demonstrate general but incomplete commoutcomes. Show evidence of some analytical to most familiar situations. Apply moderately use of data and results to draw appropresentational skills.	and critical abilities and logical thinki effective lab skills and techniques. N	ing, and ability to apply knowledge lostly correct but some erroneous
	D	Demonstrate partial but limited command of k Show evidence of some coherent and logica ability to apply knowledge to solve problems. data and results to draw appropriate conclus skills.	Il thinking, but with limited analytical Apply partially effective lab skills and	and critical abilities. Show limited d techniques. Limited ability to use
	Fail	Demonstrate little or no evidence of comma Lack of analytical and critical abilities, logical to solve problems. Apply minimally effective and/or unable to draw appropriate conclusion ineffective.	and coherent thinking. Show very little or ineffective lab skills and technic	tle or no ability to apply knowledge ques. Misuse of data and results
Course Type	Lecture with	h laboratory component course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Laboratory	,		20
	Tutorials			6
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignmen	nts	including lab reports	30
	Examination	on		70
Required/recommended reading and online materials	To be anno	unced in class		
Course Website	http://mood	le.hku.hk/		
Additional Course Information	This course	will be offered subject to a minimum	enrollment number and availa	bility of teachers.

BIOL4402 Microbial biotec	hnology (6	credits)		Academic Year	2014
Offering Department	Biological	Sciences		Quota	30
Course Co-ordinator	Dr J S H T	sang, Biological Scienc	es (jshtsang@hku.hk)		
Teachers Involved		sang, Biological Sciences			
Course Objectives	in biotechr algae. At	nology. The microbial s the end of the course	nts who would like to understand systems being used include differe the students are expected to knot the systems available for the expression.	nt types of viruses, b w the parameters ar	acteria, fungi and did conditions that
Course Contents & Topics	for microbi yeasts an provided.	al biotechnology. The d algae will be rev These include but not food additives, industri	ssing will be briefly described to e latest advances in microbial expre- iewed. Specific examples on t limited to production of recombinal al enzymes and biopesticides as	ession systems using the use of these s thant vaccines, secon	viruses, bacteria, ystems will be dary metabolites,
Course Learning Outcomes	1. Explain biotechnol 2. Unders various pro 3. Describe	the fundamental bioche ogy products. and the importance o otein products. the major expression	course, students should be able to emical concepts underlying the inc f the current recombinant technol systems, understand their purpose esentation on a self-decided topic	ustrial production of s logy for large-scale es, advantages, and c	manufacturing of isadvantages.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Bl	OL3401 Molecular biolo	ogy		
Offer in 2014 - 2015	Y 2nd	sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough ma	stery at an advanced level of extensive kr	owledge and skills require	d for attaining all the
	1		343		

		of appropriate theories, principles, eviden	deep understanding of the subject. Demonstrate noe and techniques. Illustrate insightful use and fingh quality sources and to quote/reference	critical analysis / evaluation
	В	learning outcomes. Demonstrate substa principles, evidence and techniques. Illu	road range of knowledge and skills required for antial grasp of the subject. Demonstrate gene strate critical use of relevant information from a different secondary interpretations and to qual skills.	eral integration of theories, sources, showing ability to
	С	outcomes. Demonstrate general but inc theories, principles, evidence and technic	nowledge and skills required for attaining modern complete grasp of the subject. Demonstrate ques. Illustrate use of relevant information from interpretations and to quote/reference aptly.	some partial integration of sources, showing ability to
	D	partial but limited grasp, with retention theories, principles, evidence and techn	s required for attaining some of the course learn of some relevant information, of the subject. niques. Demonstrate use and reference of se and comparison. Apply limited or barely et	Show limited integration of everal sources, but mainly
	Fail	evidence of little or no grasp of the knowl of theories, principles, evidence and tech	skills required for attaining the course learning the course learning of the subject. Show limited use of secondary sources skills are minimally effective or ineffective.	ttle or no or inapt integration
Course Type	Lecture-b	pased course		
Course Teaching & Learning Activities	Activitie	98	Details	No. of Hours
& Learning Activities	Lectures	3		30
	Tutorials	S	including group presentations	18
	Reading	/ Self study		100
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)
	Assignm	nents		30
	Examina	ation		70
Required/recommended reading and online materials	Freeman	& Co., 1995)	technology: Fundamentals of Applied then, C. L. Hershberger, W-S. Hu, D.	d Microbiology (W. H.

BIOL4409 General virolog	y (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	30
Course Co-ordinator	Dr B L Lim, Biological Sciences (bllim@hku.hk)		
Teachers Involved	Dr B L Lim, Biological Sciences Prof F C C Leung, Biological Sciences		
Course Objectives	This Course provides the fundamental principles of pathogenesis of major viral diseases that affect anir profession or graduate work in virology, medicine and b	nal health. The course will pre	n understand th pare students fo
Course Contents & Topics	Fundamental Virology 1. Classification and Nomenclature of Viruses 2. Virus structure: Capsid symmetry, Icosahedral symm 3. Virus structure: Genetic Materials, Nucleocapsid, Env 4. Virus entry: Receptors, uncoating and fusion 5. Virus-Cell interaction 6. RNA viruses: Genome replication and mRNA product 7. Baltimore Class IV (+) s.s. RNA viruses: Picornavirus 8. Baltimore Class V (-) s.s. RNA viruses: Myxoviruses 9. Ambisense RNA viruses: Bunyaviruses and Arenavir 10, 11. Baltimore Class VI (+) s.s. RNA viruses: Retrovi 12. Baltimore Class II d.s. RNA viruses: Recoviruses 13, 14. Baltimore Class II d.s. DNA viruses: Parvoviruse 15. Baltimore Class II s.s. (+) DNA viruses: Parvoviruse 16. Mechanisms of Viral Oncogenesis 17. Anti-viral treatments 18. Viruses as Tools in Medicine and Biotechnology Practical Virology 19. Specimen Collection, Transportation and Processing Quality Assurance & Laboratory Safety 20. Virus isolation, propagation and titration 21, 22. Virus Identification: Immunocytochemical assays Complement Fixation Assay, Hemagglutination and HI at 23, 24. Neutralization assay and Antiviral assay	velope tion ies uses ruses es, Herpesviruses s	
Course Learning Outcomes	On successful completion of this course, students should be familiar with virus classification and the modestamilies. 2. Gain hand-on experiences on common virological tectors.	s of replication and transmissio	n of various vira

	S. Carry C	out researches on virology after taking	this course.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL3401 Molecular biology or BIOL34	03 Immunology		
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec
Offer in 2015 - 2016	Υ				'
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advoutcomes. Show strong analytical skills and subject. Apply highly effective lab skills and	nd competent ability to acq	quire knowledge on nev	w development of the
	В	Demonstrate substantial command of a bri the course learning outcomes. Show evide development of the subject. Apply effe presentational skills.	nce of analytical skills and a	adequate ability to acqu	ire knowledge on new
	С	Demonstrate general but incomplete commendering outcomes. Show evidence of so development of the subject. Apply mode organizational and presentational skills.	me analytical skills and co	ertain ability to acquire	knowledge on new
	D	Demonstrate partial but limited command of outcomes. Show evidence of limited analy subject. Apply partially effective lab skills presentational skills.	tical skills and ability to acc	quire knowledge on ne	w development of the
	Fail	Demonstrate little or no evidence of comm			
	l all	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective.	pility to acquire knowledge	on new development	of the subject. Apply
Course Type		outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills	pility to acquire knowledge	on new development	of the subject. Apply
Course Teaching		outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective.	pility to acquire knowledge	on new development	of the subject. Apply
· · · · · · · · · · · · · · · · · · ·	Lecture w	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. ith laboratory component course	oility to acquire knowledge and techniques. Organiza	on new development	of the subject. Apply al skills are minimally
Course Teaching	Lecture w	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course	oility to acquire knowledge and techniques. Organiza	on new development	of the subject. Apply all skills are minimally
Course Teaching	Lecture w Activitie Lectures	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course	oility to acquire knowledge and techniques. Organiza	on new development	of the subject. Apply all skills are minimally No. of Hours
Course Teaching	Lecture w Activitie Lectures Laborato Tutorials	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course	oility to acquire knowledge and techniques. Organiza	on new development	No. of Hours
Course Teaching	Lecture w Activitie Lectures Laborato Tutorials	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course s yry / Self study	oility to acquire knowledge and techniques. Organiza	on new development ation and presentations	No. of Hours 24 24 6
Course Teaching & Learning Activities Assessment Methods	Lecture w Activitie Lectures Laborato Tutorials Reading	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course s yry / Self study	pility to acquire knowledge and techniques. Organiza Details	on new development ation and presentations	No. of Hours 24 24 6 100 Weighting in final
Course Teaching & Learning Activities Assessment Methods	Lecture w Activitie Lectures Laborato Tutorials Reading Methods	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course s yry / Self study ents	pility to acquire knowledge and techniques. Organiza Details	on new development ation and presentations	No. of Hours 24 24 6 100 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods	Lecture w Activitie Lectures Laborato Tutorials Reading Methods Assignm Examina Virology: Principles	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course s ory / Self study dents tion Molecular Biology and pathogenesis (and of Virology (2009) S.J. Flint, ASM Pro	Details Details Details	on new development ation and presentations	No. of Hours No. of Hours 24 24 6 100 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading	Lecture w Activitie Lectures Laborato Tutorials Reading Methods Assignm Examina Virology: Principles Basic Viro	outcomes. Lack of analytical skills and al minimally effective or ineffective lab skills effective or ineffective. with laboratory component course s rry / Self study s ents tion Molecular Biology and pathogenesis (Details Details Details	on new development ation and presentations	No. of Hours No. of Hours 24 24 6 100 Weighting in final course grade (%)

BIOL4411 Plant and food	biotechnology (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota 80		
Course Co-ordinator	Prof M L Chye, Biological Sciences (mlchye@hku.hk)	<u>'</u>		
Teachers Involved	Prof M L Chye, Biological Sciences TBC, Biological Sciences			
Course Objectives	This course covers the principles and key concepts of pincreasing global food supply. The significances of biotechnothe the emerging importance of plant biotechnology in misopharmaceuticals and other high-value proteins will be disributed insight on the real-life applications of plant and food biotechnology.	ology in agriculture and food nolecular farming for the discussed. The course will a	production, and production of	
Course Contents & Topics	 Genetic improvements in agriculture. Transgenic crops in global food production. Tools in plant genetic engineering: promoters and marker ge Techniques in plant gene transfer: Agrobacterium-mediated Nuclear and plastid transformation. Gene silencing in plants. Genetic manipulation of commerci Extending shelf-life of fruits. Prevention of enzymatic brown Genetically-engineered biofortified foods: provitamin A-enianthocyanin tomatoes. Biotechnology in plant pest and disease management: Producing crops resistant to phytopathogens and pests. Short-interfering RNAs in gene silencing to defend against ple Protecting crops in the field using the Bt toxin. Pest-resistant genetically-transformed seeds using the alphathericide-resistant crops. Plants as bioreactors for molecular farming: transgenic recombinant biopharmaceutical proteins. Biodegradable plastics. Biofuels. Genetically-modified crops and food products: regulation, test 	transformation, biolistics and ally useful biosynthetic pathwing of potato tubers. riched rice, omega-3-enriched lant viruses. a-amylase inhibitor and transplastomic plants	ays in crops.	

Course Website Additional Course Information	http://moo	dle.hku.hk/ olecular Biology & Biotechnolog			
Required/recommended reading and online materials	E-reserve	Chrispeels, M.J. and D.E. Sadava. Plants, genes, and agriculture. Jones and Bartlett. E-reserves (HKU Library) Lecture notes on Moodle			
	Presentation 20				
	Laborato	Laboratory reports			10
	Examinat	tion			70
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Reading / Self study			100	
	Laborato	ry	practical/laborator	ry/project	30
& Learning Activities	Lectures				24
Course Teaching	Activities	S	Details		No. of Hours
Course Type	Lecture w	ith laboratory component cours	e		
	Fail Fail to demonstrate command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. No evidence in ability to apply knowledge in plant biotechnology. Ineffective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Some evidence of coherent and logical thinking, accompanied with limited analytical and critical skills. Show limited ability to apply knowledge in plant biotechnology. Show limited or barely effective organizational and				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Show moderately effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes in plant biotechnology. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
Grade Descriptors	A Demonstrate thorough and complete mastery of extensive knowledge and skills required for attaining the learning outcomes in Plant and Food Biotechnology. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations in plant biotechnology. Apply highly effective organizational and presentational skills.				
Course Grade	A+ to F				
Offer in 2015 - 2016	Υ				
Impermissible combination) Offer in 2014 - 2015	N			Examination	
Pre-requisites (and Co-requisites and	Pass in BIOL3401 Molecular biology or BIOL3211 Nutrigenomics				
	 Acquire key concepts in plant and food biotechnology and basic laboratory techniques in plat biotechnology. Gain insight into real-life applications in plant and food biotechnology. Develop scientific inquiry and critical thinking skills. 				chniques in plant
Course Learning Outcomes	On successful completion of this course, students should be able to:				

BIOL4415 Healthcare biot	echnology (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences Quota 70			
Course Co-ordinator	Prof A S T Wong, Biological Sciences (awong1@hku.hk)			
Teachers Involved	Prof A S T Wong, Biological Sciences Dr K W Y Yuen, Biological Sciences			
Course Objectives	This course discusses the key concepts and principles involved in healthcare biotechnology, and the applications in molecular medicine.			
Course Contents & Topics	Genetic biotechnology in animals (transgenics, knockouts and animals as models in the study of human diseases, as biore antibiotics and vaccines and organs for xenotransplantation. Advanced molecular biology techniques related to human and diagnosis and development of new therapies. These include technologies in diagnostic medicine and forensic science; tissue and the conversion of the drug development process, with a focus on the drug target identification, high-throughput assay development (synthetic and natural products). The concept of individualized medical synthetic and natural products).	actors for the product animal science basic but not limited to: app ingineering. e early-stage, preclinic , and screening of c	ion of hormones, research, disease blications of DNA cal drug discovery chemical libraries	
Course Learning Outcomes	On successful completion of this course, students should be able	to:		
	1. Describe key concepts in genetic biotechnology and human health.			
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	3. Develo order to de	e and apply advanced laboratory techr p scientific inquiry and critical thinkin evelop solutions. sight into real-world applications in he	g skills to understand, analyze, and	evaluate problems in	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL3401 Molecular biology				
Offer in 2014 - 2015	Y 2nd	Y 2nd sem Examination May			
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F	A+ to F			
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational skills. Writings consistently demonstrate informed, thoughtful intellectual engagement with broad range of relevant concepts.				
	В				
	С	Demonstrate general but incomplete command of knowledge required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational skills. Writings mostly indicate informed, intellectual engagement with concepts or theories but not always with sufficient depth, breadth or understanding.			
	D	Demonstrate partial but limited command of knowledge required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills. Writings indicate some intellectual engagement with concepts or theories but mostly at a superficial level.			
	Fail	Fail Demonstrate little or no evidence of command of knowledge required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organizational skills are minimally effective or ineffective. Writings reveal an absence of intellectual engagement with concepts or theories. Writings are irrelevant or superficial.			
Course Type	Lecture w	ith laboratory component course			
Course Teaching					
Course Teaching	Activities	s	Details	No. of Hours	
	Activities Lectures		Details		
Course Teaching			Details	24	
Course Teaching	Lectures	ry	Details tutorials/assignments/computer sessions	24	
Course Teaching	Lectures Laborato Tutorials	ry	tutorials/assignments/computer	No. of Hours 24 24 6 100	
Course Teaching	Lectures Laborato Tutorials	ry / Self study	tutorials/assignments/computer	24 24 6 100 Weighting in final	
Course Teaching & Learning Activities	Lectures Laborato Tutorials Reading	/ Self study	tutorials/assignments/computer sessions	24 24 6 100 Weighting in final course grade (%)	
Course Teaching & Learning Activities Assessment Methods	Lectures Laborato Tutorials Reading Methods	/ Self study	tutorials/assignments/computer sessions Details	24 24 6 100 Weighting in final course grade (%)	
Course Teaching & Learning Activities Assessment Methods	Lectures Laborato Tutorials Reading Methods Assignment	/ Self study	tutorials/assignments/computer sessions Details	24 24 6	
Course Teaching & Learning Activities Assessment Methods	Lectures Laborato Tutorials Reading Methods Assignment	/ Self study sents	tutorials/assignments/computer sessions Details	24 24 6 100 Weighting in final course grade (%) 10	
Course Teaching & Learning Activities Assessment Methods	Lectures Laborato Tutorials Reading Methods Assignme Examinat Laborato Test - Textboo 2002) - Human M	/ Self study sents	tutorials/assignments/computer sessions Details Assignment/Discussion Degsgaard-Larsen, Liljefors, and Madsad, Garland Science, 2010)	24 24 6 100 Weighting in final course grade (%) 10 60 20 10	
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading	Lectures Laborato Tutorials Reading Methods Assignme Examinat Laborato Test - Textboo 2002) - Human N - Suggest	ry / Self study sents tion ry reports k of Drug Design and Discovery (Kro	tutorials/assignments/computer sessions Details Assignment/Discussion Degsgaard-Larsen, Liljefors, and Madsad, Garland Science, 2010)	24 24 66 100 Weighting in final course grade (%) 10 60 20 10	

BIOL4416 Stem cells and	Academic Year	2014			
Offering Department	Biological Sciences Quota				
Course Co-ordinator	Dr K W Y Yuen, Biological Sciences (kwyyuen@hku.hk)				
Teachers Involved	Dr K W Y Yuen, Biological Sciences Dr J Zhang, Biological Sciences				
Course Objectives	Recent progress in high-throughput omics technology has revolutionized the biological research. Genome wide profiling of various biomolecules simultaneously by omics technology generates huge amounts of data, providing the potential to obtain a global and holistic view of the system. This course aims to introduce the state-of-the-art technologies of Omics and Systems Biology, and overview of various applications of omics technology in agricultural, biomedical, environmental, and nutritional sciences. This course will also provide students hands-on experience in large scale data analysis.				
Course Contents & Topics	The course will discuss cutting-edge research in (i) regenerative and stem cell biology: - the basic characteristics of stem cells - the molecular and genetic control of cell fate specification and different embryonic and adult stem cells - experimental inducible pluripotent stem cells and tissue engineering - therapeutics potentials for stem cell technology - ethical issues in stem cell research				
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Course Learning Outcomes	(ii) aging and longevity: - model systems used for aging and life-span studies - cellular and molecular biology of aging - telomeres and cellular senescence - genomic stability, DNA mutations and repair - mitochondrial defects and oxidative stress - genetic aging diseases - genetic aging diseases - genetic ,biochemical and metabolic pathways involved in longevity On successful completion of this course, students should be able to: 1. Appreciate the complex regulations of cell potency, cell age and organism longevity. 2. Describe the characteristics of stem cells and the different types of stem cells.				
Pre-requisites	Describe applications of stem cell research, and understand ethical concerns involved. Describe the cellular mechanisms of aging, and the pathways involved in longevity. Pass in BIOL3211 Nutrigenomics or BIOL3401 Molecular biology or BIOL3402 Cell biology and cell				
(and Co-requisites and Impermissible combination)		technology or BIOL3403 Immunology or BIOL3404 Protein structure and function or BIOL3408 Genetics or BIOC3601 Metabolism or BIOC3604 Essential techniques in biochemistry and molecular biology.			
Offer in 2014 - 2015	Y 2nd	Y 2nd sem Examination May			
Offer in 2015 - 2016	N				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough and complete mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no abilit knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				or no ability to apply
Course Type	Lecture-based course				
Course Teaching	Activities Details No. of				No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading /	Self study			100
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Assignme	nts			50
	Examination	on			50
Required/recommended reading and online materials	References: Essentials of stem cell biology edited by Robert Paul Lanza 2009				
	Science in medicine: the JCI textbook of molecular medicine By Andrew R. Marks, American Society for Clinical Investigation, Ushma S. Neill				
		oiology of aging, Issue 51 I Guarente, Linda Partridge, Douglas (C. Wallace - 2008		
Course Website	http://moodle.hku.hk/				
Additional Course Information	This course will be offered subject to a minimum enrollment number and availability of teachers.				

BIOL4417 'Omics' and s	ystems biology (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	40
Course Co-ordinator	Dr J W Zhang, Biological Sciences (jzhang1@hku.hk)		
Teachers Involved	Dr J W Zhang, Biological Sciences		
Course Objectives	Recent progress in high-throughput omics technology has revolutionized the biological research. Genore wide profiling of various biomolecules simultaneously by omics technology generates huge amounts data, providing the potential to obtain a global and holistic view of the system. This course aims introduce the state-of-the-art technologies of Omics and Systems Biology, and overview of various applications of omics technology in agricultural, biomedical, environmental, and nutritional sciences. The course will also provide students hands-on experience in large scale data analysis.		
Course Contents & Topics	This course will introduce the concept of 'Omics' study in bic comprehensively study a biological entity ('-ome' e.g. all genetissue, a cell or an environment. The course will discuss lar	s, transcripts, proteins) i	n an organism, a

	Genomics - Transcripto Proteomics Interactome Systems bibiological s	ic analyses and applications involved the study of all genes or DNA sequer mics - the study of all mRNA transcripthes - the study of all proteins es - the study of all genetic or physical ology and functional genomics - the system, and modeling to discover the icid icid icid icid icid icid icid ici	nces in a genome hts I interactions among genes or prote tudy of the interactome/network be ntegrated function and emergent po https://www.nc.com/nclude/nchomics/nclude/nchomics/nchomics/nclude/nchomics/nchomi	tween components of a roperties of that system cis, metagenomics (all	
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the conceptual differences between 'Omics'/Systems Biology studies and traditional one-gene approach, and discuss the pros and cons of both approaches. 2. Describe common methodologies used in major 'Omics' studies. 3. Describe basic analytical methods, and access database resources generated in major 'Omics' studies. 4. Describe how 'Omics' data are used in Systems Biology to understand the integrated functions of the system. 5. Identify questions that can be addressed by 'Omics' and System Biology studies, appreciate and describe applications in 'Omics' studies.				
Pre-requisites (and Co-requisites and Impermissible combination)	technology	OL3211 Nutrigenomics or BIOL340 or BIOL3403 Immunology or BIOL340 Metabolism or BIOC3604 Essential te	04 Protein structure and function or	BIOL3408 Genetics or	
Offer in 2014 - 2015	BIOC3601 Metabolism or BIOC3604 Essential techniques in biochemistry and molecular bio Y 2nd sem Examination				
Offer in 2015 - 2016	Υ			,	
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough and complete mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course				
	learning outcomes. Evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abili knowledge to solve problems. Organization a	ties, logical and coherent thinking. Show ve	ry little or no ability to apply	
Course Type	Lecture with	n laboratory component course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laboratory	1		24	
	Reading /	Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignmen		course assignments/projects/quizzes	40	
	Examination	on ————————————————————————————————————		60	
Required/recommended reading and online materials	ТВА				
Course Website	http://mood	le.hku.hk/			

BIOL4501 Molecular ph	ylogenetics and evolution (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota	25	
Course Co-ordinator	Dr V Dvornyk, Biological Sciences (dvornyk@hkucc.hku.hk)			
Teachers Involved	Dr V Dvornyk, Biological Sciences			
Course Objectives	The purpose of this course is to provide a comprehensive systematics and phylogenetic research, focusing on in depth treatment of theoretical issues in formal lectures is coupled with acquisition of the sequences from the databases. DNA and protein sequence assembly and alignment phylogeny reconstruction using parsimony, distance based, are introduction to relevant software for phylogenetics.	coverage of the latest to practical workshops.	echniques. Th	
	240			

	1				O	
		s for the evaluation of phylogene trees				
Course Contents & Topics	Introduction to molecular systematics and phylogenetics. Tree of life. Obtaining, storing and archiving specimens and tissue samples for use in molecular studies. Sources of molecular data, experimental design for molecular studies, taxon sampling and marker choice. Overview of basic laboratory methods fo data collection (DNA isolation, PCR, DNA sequencing). Sequence editing and aligning; utilizing public sequence databases. Estimation of nucleotide polymorphism and diversity. Methods for phylogeny reconstruction: parsimony, distance methods, maximum likelihood, Bayesian methods. Statistical methods for the evaluation of phylogenetic trees. Software for phylogeny reconstruction. Molecular markers in conservation and ecological genetics. Phylogenies for different organisms. Biogeography vs. phylogeography using molecular data.					
Course Learning Outcomes	On succe	ssful completion of this course, student	ts should be able to:			
	2. Unders (s) for the 3. Unders	tand the fundamental principles of mole tand the purposes each method is use analysis of given data. tand the advantages and disadvantage practical skills for the analysis of mole	ed for and be able to coes of the methods.	choose the most a	ppropriate metho	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in B	IOL3401 Molecular biology or BIOL340	08 Genetics			
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate comprehensive knowledge and an advanced level of skills sufficient for achieving all the goals and expected learning outcomes of the course. Show deep understanding of the course subject. Excellent ability to efficiently combine and apply the relevant theories, principles, and methods taught in the course. Advanced skills in possession and application of the methods and software for evolutionary analysis of real data. Excellent ability to collect, systematize, analyze and critically evaluate data from various sources and to quote them appropriately. Excellent presentational skills.					
	B Demonstrate good knowledge and good level of skills sufficient for accomplishing most of the goals and expected learning outcomes of the course. Demonstrate good understanding of the course subject. Show good ability to combine and to apply theories, principles, and methods taught in the course. Substantial skills in possession and application of the methods and software for molecular evolutionary analysis of real data. Show good ability to collect, systematize, analyze and critically evaluate data from various sources and to quote them appropriately. Good presentational skills.					
	С	C Demonstrate basic knowledge and basic level of skills sufficient for accomplishing most of the goals and expected learning outcomes of the course. Demonstrate general understanding of the subject. Show some ability to combine and to apply theories, principles and methods taught in the course. Basic skills in possession and application of the methods and software for molecular evolutionary analysis of real data. Show general ability to collect, systematize, analyze and evaluate data from various sources and to quote them appropriately. Basic presentational skills.				
	D	Demonstrate incomplete knowledge and weak skills sufficient for accomplishing only some of the goals and expected learning outcomes of the course. Demonstrate poor understanding of the subject, Show poor ability to combine and to apply theories, principles, and methods taught in the course. Limited skills in possession and application of the methods and software for molecular evolutionary analysis of real data. Show poor ability to collect data from various sources, to systematize, analyze and evaluate them appropriately. Poor presentational skills.				
	Fail	Demonstrate poor or no knowledge and skills of the course. Demonstrate very poor or no utheories, principles, and methods taught in thand software for molecular evolutionary anal sources and to systematize, analyze and eva	understanding of the subject. ne course. Poor or no skills in lysis of real data. Show very	. Show no ability to con possession and applite poor or no ability to contact the contact of the	mbine and/or to apply cation of the methods collect data from other	
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laborato	ry	computer laboratory/tutorial/pr	rojects	36	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	•	Details		Veighting in final course grade (%)	
	Assignm	ents			40	
	Examina	tion			60	
Required/recommended reading	Examination 60 Nei M., Kumar S.: Molecular Evolution and Phylogenetics (Oxford University Press, 2000) Hall B.G.: Phylogenetic Trees Made Easy (Sinauer, 2004, 2nd ed.)					
and online materials	TBC					
	-	odle.hku.hk/				

BIOL4861 Ecology & biodiversity internship (6 credits) Academic Year			2014	
Offering Department	Biological Sciences Quota			
Course Co-ordinator	Dr T Vengatesen, Biological Sciences (rajan@hku.hk)			
Teachers Involved	All SBS academic staff, Biological Sciences			
Course Objectives	To provide a stimulating experience for all Ecology & Biodiversity Major undergraduates to integrate and apply their knowledge and skills obtained from the Ecology & Biodiversity Major through gaining work experience in the field of Ecology & Biodiversity that are related to the major of study.			

Course Contents & Topics	Students taking this course will work as an intern for at least 160 hours within the University or outside the University in a company, government department or NGO. The internship may be arranged by the School or obtained by students themselves. In the latter case, the internship must be in a relevant field to the Ecology & Biodiversity Major that the students are taking and prior approval by the course coordinator is required.					
Course Learning Outcomes	1. gain first 2. apply the 3. acquire	On successful completion of this course, students should be able to: 1. gain first hand work experience in a job placement related to their Ecology & Biodiversity Major. 2. apply the knowledge in their Ecology & Biodiversity Major in solving practical problems in the work place. 3. acquire an understanding and appreciation of the real work environment. 4. extend their network in their field of study.				
Pre-requisites (and Co-requisites and Impermissible combination)		Students are expected to have satisfactorily completed their Year 3 study. This course is for Ecology & Biodiversity Major students only.				
Offer in 2014 - 2015	Y 2nd	2nd sem Summer Examination No Exam				
Offer in 2015 - 2016	Υ	Υ				
Course Grade	Pass/Fail					
Grade Descriptors	Pass	Able to apply knowledge to solve problems in the job or assigned by supervisor(s). Estal colleagues, and clients in the job. Successfu working hours, written and oral report, and eva	olishes effective collabora Ily fulfills the requirements	tion and communicati set out in the Course	on with supervisor(s),	
	Fail	Very limited or no ability to solve problems in assigned by supervisor(s). Fails to establis colleagues, or clients in the job. Fails to satis hours, written and oral report, or evaluation by	h effective collaboration fy the requirements set ou	or communication wit	h supervisor(s), other	
Course Type	Internship					
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Internship	it is expected that students are to Work at least 160 hours (or the equivalent of 4 weeks full-time)				
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Written re	port	written report, feedback and oral	employer's presentation	100	
Course Website	http://www.	.biosch.hku.hk/ecology/lsc/				
Additional Course Information	internships offering the Students a those who Enrolment through the	http://www.biosch.hku.hk/ecology/lsc/ Students taking this course have to submit a two-page written report and an oral presentation about their internships, which will be assessed by internal supervisors. Student's supervisor at work i.e. the institution offering the internship will also submit an assessment report to the University. Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given to those who have completed Year 2. Enrolment of this course is not conducted via the online course selection system and should be made through the relevant Department/School office after approval has been obtained from the course coordinator. BIOL4861 Ecology & biodiversity internship is not a Capstone Course.				

BIOL4911 Conservation s	cience in practice (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	15
Course Co-ordinator	Prof Y J Sadovy, Biological Sciences (yjsadovy@hku.hk)		
Teachers Involved	Prof Y J Sadovy, Biological Sciences		
Course Objectives	To build on the foundation acquired by students in the Biologic biodiversity and environmental science by using case studies that stand concepts learned to produce and successfully debate a topic in specifically address the use of science in achieving meaningful con the need for considering social, economic, and political contexts. Streams orally using sound practical and scientific reasoning. This coulidoursity major students.	timulate them to integr conservation science. servation outcomes ta udents will be expecte	rate the principles Case studies will king into account to present their
Course Contents & Topics	This course will use directed case studies to give students the consolutions to specific problems in conservation and the application world, and within the wider context of economic development, uncertainty. Possible case studies range from ecosystem services assessment of conservation risk, effectiveness of international con and the relationship between biodiversity and human livelihoods. Tu provided to discuss specific issues of relevance across case studies.	of conservation scient political consideration , biological footprints, servation and biodive torials by the course of	ce in the modern ns and scientific wildlife trade, to rsity instruments
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Have an in-depth understanding of the topic studied, the major prospects for further work in the area; 2. Have developed investigative skills associated with the case storganization and presentation of information; 3. Understand the importance and complexities of conserving biodive 4. Be able to identify practical and scientifically defensible init	tudy selected which in	
	conservation intervention; 5. Be able to competently present the case study and convincingly ar		s for successful

(and Co-requisites and Impermissible combination)		BIOL4XXX) in the Ecology & Biodiversity Major including BIOL3303 Conservation ecology. This capstone course is for Ecology & Biodiversity Major students only.				
Offer in 2014 - 2015	Y 2n	d sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	learning outcomes. Show strong analytical and critical abilities and logical thinking, with strong erintegrate and synthesize information across subject areas, including from practical work undertrapply knowledge to a wide range of complex, familiar and unfamiliar situations and showing consist and political dimensions for addressing conservation challenges. Apply highly effective presentation evidence of attention to thoughtful and reflective thinking and consideration of the wider issue conservation for Society.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, with some integration of materials and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate effective presentational skills. Some evidence of clear attention to thoughtful and reflective thinking and attention to detail. Consideration of practical components in conservation management must be demonstrated including the importance of biodiversity conservation in Society.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, ability to apply knowledge to most familiar situations and of relevance of biodiversity conservation for Society. Apply moderately effective presentational skills and understanding of the practical challenges of effective conservation initiatives. Little evidence of clear attention to thoughtful and reflective thinking.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities and little attempt at integration. Have basic understanding of importance of biodiversity for Society. Show limited ability to apply knowledge to solve problems or consider the practical challenges of biodiversity conservation. Apply limited effectiveness in presentational skills. Lack of attention to thoughtful and reflective thinking.					
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking or attention to detail. Show very little on ability to apply knowledge or practical thinking to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Project-ba	ased course				
Course Teaching	Activitie	Activities Details		No. of Hours		
& Learning Activities	Reading	/ Self study	supervised practical work of at least 80 hours followed by written & oral reports. Tutorials provided by course coordinator	80		
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)		
	Oral pre	sentation		40		
	Researc	h report	project report	60		
Course Website	http://www	w.biosch.hku.hk/ecology/lsc/				
Additional Course Information	This cour	se will be offered subject to a minimum e	enrollment number and availability of to	eachers.		

BIOL4962 Food & nutrition	onal science internship (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	
Course Co-ordinator	Dr J C Y Lee, Biological Sciences (jettylee@hku.hk)		
Teachers Involved	All SBS academic staff, Biological Sciences		
Course Objectives	To provide a stimulating capstone experience for all Food & Nut integrate and apply their knowledge and skills obtained from the I gaining work experience in the field of Food & Nutritional Science to	Food & Nutritional Ście	ence Major through
Course Contents & Topics	Students taking this course will work as an intern for at least 160 University in a company, government department or NGO. The interobtained by students themselves. In the latter case, the internship Nutritional Science Major that the students are taking and prior required.	ernship may be arrange must be in a relevant	ed by the School of field to the Food 8
Course Learning Outcomes	On successful completion of this course, students should be able to 1. gain first hand work experience in a job placement related to the 2. apply the knowledge in their Food & Nutritional Science Major place. 3. acquire an understanding and appreciation of the real work envir 4. extend their network in their field of study.	r Food & Nutritional So in solving practical pro	
Pre-requisites (and Co-requisites and Impermissible combination)	 gain first hand work experience in a job placement related to the apply the knowledge in their Food & Nutritional Science Major place. acquire an understanding and appreciation of the real work envir 	r Food & Nutritional So in solving practical pro onment. urses courses (BIOL3) study.	oblems in the work
Pre-requisites (and Co-requisites and	gain first hand work experience in a job placement related to the 2. apply the knowledge in their Food & Nutritional Science Major place. acquire an understanding and appreciation of the real work envir 4. extend their network in their field of study. Pass in at least 24 credits of advanced level biological sciences on the Food & Nutritional Science Major. Students are expected to have satisfactorily completed their Year 3.	r Food & Nutritional So in solving practical pro onment. urses courses (BIOL3) study.	oblems in the work
Pre-requisites (and Co-requisites and Impermissible combination)	gain first hand work experience in a job placement related to the 2. apply the knowledge in their Food & Nutritional Science Major place. acquire an understanding and appreciation of the real work envir 4. extend their network in their field of study. Pass in at least 24 credits of advanced level biological sciences on the Food & Nutritional Science Major. Students are expected to have satisfactorily completed their Year 3. This capstone course is for Food & Nutritional Science Major students.	r Food & Nutritional So in solving practical pro onment. urses courses (BIOL3) study. nts only.	oblems in the work

Grade Descriptors	Pass	Pass Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work rectite job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s) and clients in the job. Successfully fulfills the requirements set out in the Course Description reworking hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating experiormance in the above would be awarded a grade of "Distinction". Fail Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s) colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding hours, written and oral report, or evaluation by supervisor(s), etc				
	Fail					
Course Type	Internship	Internship				
Course Teaching & Learning Activities	Activities	S	Details	No. of Hours		
a Learning Activities	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)					
Assessment Methods and Weighting	Methods		Details Weighting in course grad			
	Written report written report, employer's feedback and oral presentation					
Course Website	http://www	.biosch.hku.hk/ecology/lsc/				
Additional Course Information	presentati supervisor the Univer Students a those who Satisfacto internship Distinction obtain the Enrolment	http://www.biosch.hku.hk/ecology/lsc/ Students taking this course have to submit a written report of not less than 1,000 words and an oral presentation about their internships, which will be assessed by internal supervisors. Student's supervisor at work i.e. the institution offering the internship will also submit an assessment report to the University. Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given those who have completed Year 2. Satisfactory completion of this course can be counted towards the Capstone requirement. Details internship will be recorded on the student's transcript. This course will be assessed on "Pass, Fail ar Distinction" basis. Students who are interested to enrol in this course should contact the Department obtain the approval. Enrolment of this course is not conducted via the online course selection system and should be made through the relevant Department/School office after approval has been obtained from the course				

	gy & biote	echnology internship (6 credits)		Academic Year	2014	
Offering Department	Biological	Sciences		Quota		
Course Co-ordinator	Dr T Veng	atesen, Biological Sciences (rajan@hku.	hk)			
Teachers Involved	All SBS ac	ademic staff, Biological Sciences				
Course Objectives	To provide a stimulating capstone experience for all Molecular Biology & Biotechnology Major undergraduates to integrate and apply their knowledge and skills obtained from the Molecular Biology & Biotechnology Major through gaining work experience in the field of Molecular Biology & Biotechnology that are related to the major of study.					
Course Contents & Topics	University obtained by Molecular	Students taking this course will work as an intern for at least 160 hours within the University or outside the University in a company, government department or NGO. The internship may be arranged by the School or obtained by students themselves. In the latter case, the internship must be in a relevant field to the Molecular Biology & Biotechnology Major that the students are taking and prior approval by the course coordinator is required.				
Course Learning Outcomes	 gain first Major. apply the work place acquire 	sful completion of this course, students of thand work experience in a job place e knowledge in their Molecular Biology of the standard and appreciation of the heir network in their field of study.	ment related to the	jor in solving praction	, 0,	
Pre-requisites (and Co-requisites and Impermissible combination)	Molecular Students a	least 24 credits of advanced level biolo Biology & Biotechnology Major. are expected to have satisfactorily complone course is for Molecular Biology & Bi	eted their Year 3 stu	dy.	BIOL4XXX) in the	
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam	
Offer in 2015 - 2016	Υ					
Course Grade	Pass/Fail					
Course Grade Grade Descriptors	Pass/Fail Pass	Able to apply knowledge to solve problems in the job or assigned by supervisor(s). Estable colleagues, and clients in the job. Successfull working hours, written and oral report, and performance in the above would be awarded a general superformance.	shes effective collabora fulfills the requirements evaluation by supervisor	ition and communications set out in the Course	n with supervisor(s), Description regarding	
		the job or assigned by supervisor(s). Establ colleagues, and clients in the job. Successfull working hours, written and oral report, and	ishes effective collabora r fulfills the requirements evaluation by supervisc grade of "Distinction". e workplace. Fails to har effective collaboration the requirements set ou	tion and communication and communication as set out in the Course or(s), etc. Students defined and or carry out the work or communication with	on with supervisor(s), Description regarding monstrating excellent k required in the job or supervisor(s), other	
	Pass	the job or assigned by supervisor(s). Establ colleagues, and clients in the job. Successfull working hours, written and oral report, and performance in the above would be awarded a context of the very supervisor (s). Fails to establish colleagues, or clients in the job. Fails to satisfy	ishes effective collabora r fulfills the requirements evaluation by supervisc grade of "Distinction". e workplace. Fails to har effective collaboration the requirements set ou	tion and communication and communication set out in the Course or(s), etc. Students defined and or carry out the work or communication with	on with supervisor(s), Description regarding monstrating excellent k required in the job or supervisor(s), other	

	Internship work	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Written report	written report, employer's feedback and oral presentation	100
Course Website	http://www.biosch.hku.hk/ecology/lsc/		
Additional Course Information	Students taking this course have to submit a presentation about their internships, which is supervisor at work i.e. the institution offering the University. Students are expected to have satisfactorily those who have completed Year 2. Satisfactory completion of this course ca internship will be recorded on the student Distinction" basis. Students who are interest obtain the approval. Enrolment of this course is not conducted through the relevant Department/School coordinator.	vill be assessed by internal supervisors. So the internship will also submit an assess completed their Year 3 study. Special on the counted towards the Capstone restranscript. This course will be assessivated to enrol in this course should contribute to the course should contribute to	Student's ment report to consideration be given to equirement. Details of sed on "Pass, Fail and tact the Department to a and should be made

BIOL4964 Biological scie	nces intern	ship (6 credits)		Academic Year	2014	
Offering Department	Biological S	Sciences		Quota		
Course Co-ordinator	Dr T Venga	atesen, Biological Sciences (rajar	@hku.hk)			
Teachers Involved	All SBS aca	ademic staff, Biological Sciences				
Course Objectives	and apply	a stimulating capstone experien their knowledge and skills obta in the field of Biological Science	ined from the Biological S	sciences Major thro		
Course Contents & Topics	University i obtained b	aking this course will work as an n a company, government depar y students themselves. In the Sciences major that the studen	tment or NGO. The interns latter case, the internship	hip may be arrange must be in a re	ed by the School o levant field to the	
Course Learning Outcomes	1. gain first	oful completion of this course, stu- hand work experience in a job p to knowledge in their Biological Sc	acement related to their Bi			
		an understanding and appreciation in their network in their field of study		nent.	·	
Pre-requisites (and Co-requisites and Impermissible combination)	Biological S Students a	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Biological Sciences Major. Students are expected to have satisfactorily completed their Year 3 study. This captsone course is for Biological Sciences Major students only.				
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam	
Offer in 2015 - 2016	Υ				'	
Course Grade	Pass/Fail					
Grade Descriptors	Pass	Able to apply knowledge to solve problem the job or assigned by supervisor(s) colleagues, and clients in the job. Su working hours, written and oral repeperformance in the above would be aw	 Establishes effective collabora ccessfully fulfills the requirements ort, and evaluation by supervisor 	ation and communication set out in the Course	on with supervisor(s), Description regarding	
	Fail	Very limited or no ability to solve proble assigned by supervisor(s). Fails to colleagues, or clients in the job. Fails hours, written and oral report, or evaluations.	establish effective collaboration to satisfy the requirements set out	or communication with	n supervisor(s), other	
Course Type	Internship					
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Internship	work	it is expected that work at least 160 equivalent of 4 we	hours (or the	160	
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%)	
	Written rep	port	written report, feedback and oral	employer's presentation	100	
Course Website	http://www.	biosch.hku.hk/ecology/lsc/				
Additional Course Information	presentatio	iking this course have to submit a n about their internships, which was at work i.e. the institution offering	vill be assessed by internal	supervisors. Stude	ent's	

Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given to those who have completed Year 2.

Satisfactory completion of this course can be counted towards the Capstone requirement. Details of internship will be recorded on the student's transcript. This course will be assessed on "Pass, Fail and Distinction" basis. Students who are interested to enrol in this course should contact the Department to obtain the approval.

Enrolment of this course is not conducted via the online course selection system and should be made through the relevant Department/School office after approval has been obtained from the course coordinator.

BIOL4991 Ecology & biod		• • •			
Offering Department	Biological	Sciences	Quota	30	
Course Co-ordinator	Prof G A	Williams, Biological Sciences (hrs	bwga @hku.hk)		
Teachers Involved	All acade	mic staff, Biological Sciences			
Course Objectives	and apply	To provide a stimulating capstone experience for Ecology & Biodiversity Major undergraduates to integrat and apply their knowledge and skills obtained from the Ecology & Biodiversity Major through planning an carrying out a research project under the supervision of a member of staff.			
Course Contents & Topics	admissior		pective supervisor prior to selecting this co course coordinator, students will complete r.		
Course Learning Outcomes	1. critique 2. use this 3. develop 4. design 5. analyse 6. presen 7. draw a 8. highligl 9. submit	o and formulate scientific hypothe and undertake practical research e and evaluate the data collected t data in a professional manner to n objective series of conclusions b	literature. fically relevant research question. ses to test this question. work to formally test the hypotheses proporto test the hypotheses. illustrate the outcomes. pased on the experimental work. Ings and place them into a holistic scientifical urnal format.		
Pre-requisites (and Co-requisites and Impermissible combination)	Ecology & Cumulativ Students	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Ecology & Biodiversity Major; and Cumulative GPA of 3.0 or above. Students are not permitted to take both BIOL3991 and BIOL4991. This capstone course is for Ecology & Biodiversity Major students only.			
Offer in 2014 - 2015	N		Examination	on	
Offer in 2015 - 2016	Υ			'	
Course Grade	A+ to F				
Grade Descriptors	Evidence of complete or near-complete understanding and a thorough grasp of the subject matter as demonstrated by attainment of all learning outcomes. Excellent critique and knowledge of relevant literature and identification of research hypothesis. Well designed experimental approach to test research hypothesis. Show excellent organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate comprehensive, critical, assessment of results and professional presentation of research work. B Evidence of near-complete understanding and a good grasp of the subject matter as demonstrated by attainment of the majority of learning outcomes. Good critique and knowledge of relevant literature and identification of research hypothesis. Appropriately designed experimental approach to test research hypothesis. Show good organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate effective, critical, assessment of results and				
	good presentation of research work. C Evidence of adequate understanding and grasp of the subject matter as demonstrated by general but incomplete attainment of most of the learning outcomes. Acceptable critique and knowledge of relevant literature and identification of research hypothesis. Adequately designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate adequate but not necessarily critical, assessment of results and presentation of research work. D Evidence of limited understanding and grasp of the subject matter as demonstrated by incomplete attainment of many				
	of the learning outcomes. Limited critique and knowledge of relevant literature and identification of research hypothesis. Poorly designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate confused and poorly organized assessment of results and limited presentation of research work.				
	Fail Evidence of poor or inadequate understanding and grasp of the subject matter such that most of the learning outcomes are not attained. Poor critique and knowledge of relevant literature and identification of research hypothesis. Badly designed experimental approach to test research hypothesis. Show little evidence of appropriate organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate incorrect interpretation and assessment of results and poor presentation of research work.				
Course Type	Project-ba	ased course			
Course Teaching	Activitie	S	Details	No. of Hours	
& Learning Activities		/ Self study	formal lectures, seminars & practical work	144	
Assessment Methods and Weighting	Methods	3	Details	Weighting in fina course grade (%	
	Dissertat	tion		80	
	Oral pres	sentation	research seminar	20	
		Oral presentation research seminar 20			

A dissertation of about 9,000 - 12,000 words (80% weighting) should be submitted by April 15th and a research seminar (20% weighting).

BIOL4992 Food & nutriti Offering Department		Il Sciences		Quota	30	
Course Co-ordinator	-	Williams, Biological Science	e (hrehwaa@hku hk)	Quota	30	
Teachers Involved		emic staff, Biological Science	, ,			
Course Objectives			experience for Food & Nutrition	al Science Major u	ndergraduates to	
Course Objectives	integrate	and apply their knowledge a	and skills obtained from the Food project under the supervision of a	d & Nutritional Scier		
Course Contents & Topics	admissio		a prospective supervisor prior to so by the course coordinator, student ervisor.			
Course Learning Outcomes	On succe	essful completion of this cour	se, students should be able to:			
Pre-requisites	2. use th 3. develo 4. design 5. analys 6. preser 7. draw a 8. highlig 9. submit 10. prese	op and formulate scientific hyp and undertake practical rese ee and evaluate the data colle th data in a professional manu an objective series of conclus that and discuss their research their work following a specifient their work as a scientific cat least 24 credits of advance	scientifically relevant research que potheses to test this question. earch work to formally test the hypoted to test the hypotheses. ener to illustrate the outcomes. ions based on the experimental was findings and place them into a heied journal format. conference talk.	ootheses proposed. rork. polistic scientific cont		
(and Co-requisites and Impermissible combination)	Cumulati	Food & Nutritional Science Major; and Cumulative GPA of 3.0 or above. This capstone course is for Food & Nutritional Science Major students only.				
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A	A Evidence of complete or near-complete understanding and a thorough grasp of the subject matter as demonstrated by attainment of all learning outcomes. Excellent critique and knowledge of relevant literature and identification of research hypothesis. Well designed experimental approach to test research hypothesis. Show excellent organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate comprehensive, critical, assessment of results and professional presentation of research work.				
	В	B Evidence of near-complete understanding and a good grasp of the subject matter as demonstrated by attainment of the majority of learning outcomes. Good critique and knowledge of relevant literature and identification of research hypothesis. Appropriately designed experimental approach to test research hypothesis. Show good organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate effective, critical, assessment of results and good presentation of research work.				
	С	C Evidence of adequate understanding and grasp of the subject matter as demonstrated by general but incomplete attainment of most of the learning outcomes. Acceptable critique and knowledge of relevant literature and identification of research hypothesis. Adequately designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate adequate but not necessarily critical, assessment of results and presentation of research work.				
	D	D Evidence of limited understanding and grasp of the subject matter as demonstrated by incomplete attainment of many of the learning outcomes. Limited critique and knowledge of relevant literature and identification of research hypothesis. Poorly designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate confused and poorly organized assessment of results and limited presentation of research work.				
	Fail	are not attained. Poor critique designed experimental approach	understanding and grasp of the subject n and knowledge of relevant literature an ht to test research hypothesis. Show little (fieldwork techniques. Demonstrate incor rich work.	d identification of resear evidence of appropriate	ch hypothesis. Badly organizational and/or	
Course Type	Project-b	ased course				
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Reading	J / Self study	formal lectures, practical work	seminars &	14	
Assessment Methods and Weighting	Method	s	Details		Veighting in fina course grade (%	
	Disserta	ition			80	
	Oral pre	sentation	research seminar		20	
Course Website	http://ww	w.biosch.hku.hk/ecology/lsc/				
	A disser	~				

BIOL4993 Molecular biolo	r biology & biotechnology project (12 credits) Academic Year 2014		
Offering Department	Biological Sciences	Quota	30

Course Co-ordinator	Prof G A Williams, Biological Sciences (hrsbwga@hku.hk)					
Teachers Involved	All acader	nic staff, Biological Sciences				
Course Objectives	undergrad Biotechno	To provide a stimulating capstone experience for all Molecular Biology & Biotechnology Major undergraduates to integrate and apply their knowledge and skills obtained from the Molecular Biology & Biotechnology Major through planning and carrying out a research project under the supervision of a member of staff.				
Course Contents & Topics	to the cou	Students should seek approval from a prospective supervisor prior to selecting this course. After admission to the course is approved by the course coordinator, students will complete their project work under the guidance of their supervisor.				
Course Learning Outcomes	On succes	ssful completion of this course, students	should be able to:			
	2. use this 3. develop 4. design 5. analyse 6. present 7. draw ar 8. highligh 9. submit	1. critique and review appropriate scientific literature. 2. use this information to generate a scientifically relevant research question. 3. develop and formulate scientific hypotheses to test this question. 4. design and undertake practical research work to formally test the hypotheses proposed. 5. analyse and evaluate the data collected to test the hypotheses. 6. present data in a professional manner to illustrate the outcomes. 7. draw an objective series of conclusions based on the experimental work. 8. highlight and discuss their research findings and place them into a holistic scientific context. 9. submit their work following a specified journal format. 10. present their work as a scientific conference talk.				
Pre-requisites (and Co-requisites and Impermissible combination)	Molecular Cumulativ	t least 24 credits of advanced level biol Biology & Biotechnology Major; and e GPA of 3.0 or above. tone course is for Molecular Biology & Bi	· ·	X or BIOL4XXX) in the		
Offer in 2014 - 2015	N		Examination	on		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Evidence of complete or near-complete understanding and a thorough grasp of the subject matter as demonstrated by attainment of all learning outcomes. Excellent critique and knowledge of relevant literature and identification of research hypothesis. Well designed experimental approach to test research hypothesis. Show excellent organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate comprehensive, critical, assessment of results and professional presentation of research work.					
	Evidence of near-complete understanding and a good grasp of the subject matter as demonstrated by attainment of the majority of learning outcomes. Good critique and knowledge of relevant literature and identification of research hypothesis. Appropriately designed experimental approach to test research hypothesis. Show good organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate effective, critical, assessment of results and good presentation of research work.					
	Evidence of adequate understanding and grasp of the subject matter as demonstrated by general but incomplete attainment of most of the learning outcomes. Acceptable critique and knowledge of relevant literature and identification of research hypothesis. Adequately designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate adequate but not necessarily critical, assessment of results and presentation of research work.					
	D Evidence of limited understanding and grasp of the subject matter as demonstrated by incomplete attainment of many of the learning outcomes. Limited critique and knowledge of relevant literature and identification of research hypothesis. Poorly designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate confused and poorly organized assessment of results and limited presentation of research work.					
	Fail	Evidence of poor or inadequate understanding are not attained. Poor critique and knowledge designed experimental approach to test resear analytical skills and laboratory/fieldwork technand poor presentation of research work.	e of relevant literature and identification of rch hypothesis. Show little evidence of appro	research hypothesis. Badly opriate organizational and/or		
	Project-based course					
Course Type	Project-ba	Activities Details				
Course Teaching	Activities		Details	No. of Hours		
Course Teaching	Activities		Details formal lectures, seminars & practical work			
Course Teaching & Learning Activities Assessment Methods	Activities	s / Self study	formal lectures, seminars &	144 Weighting in final		
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Activities Reading	s / Self study	formal lectures, seminars & practical work	No. of Hours 144 Weighting in final course grade (%)		
Course Teaching & Learning Activities Assessment Methods	Activities Reading	s / Self study	formal lectures, seminars & practical work	Weighting in fina		
Course Teaching & Learning Activities Assessment Methods	Activities Reading Methods Dissertati Oral pres	s / Self study	formal lectures, seminars & practical work Details	Weighting in fina course grade (%)		

BIOL4994 Biological se	ciences project (12 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota	30		
Course Co-ordinator	Prof G A Williams, Biological Sciences (hrsbwga@hku.hk)				
Teachers Involved	All academic staff, Biological Sciences	All academic staff, Biological Sciences			
Course Objectives	To provide a stimulating capstone experience for all Biological sand apply their knowledge and skills obtained from the Biolo carrying out a research project under the supervision of a member of the supervision of a member of the supervision of a member of the supervision of the	gical Science Major throug			

Course Contents & Topics	to the co	Students should seek approval from a prospective supervisor prior to selecting this course. After admission to the course is approved by the course coordinator, students will complete their project work under the guidance of their supervisor.				
Course Learning Outcomes	1. critique 2. use thi 3. develo 4. design 5. analys 6. preser 7. draw a 8. highlig 9. submit	On successful completion of this course, students should be able to: 1. critique and review appropriate scientific literature. 2. use this information to generate a scientifically relevant research question. 3. develop and formulate scientific hypotheses to test this question. 4. design and undertake practical research work to formally test the hypotheses proposed. 5. analyse and evaluate the data collected to test the hypotheses. 6. present data in a professional manner to illustrate the outcomes. 7. draw an objective series of conclusions based on the experimental work. 8. highlight and discuss their research findings and place them into a holistic scientific context. 9. submit their work following a specified journal format. 10. present their work as a scientific conference talk.				
Pre-requisites (and Co-requisites and Impermissible combination)	Biologica Cumulati	Pass in at least 24 credits of advanced level biological sciences courses (BIOL3XXX or BIOL4XXX) in the Biological Sciences Major; and Cumulative GPA of 3.0 or above. This capstone course is for Biological Sciences Major students only.				
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Evidence of complete or near-complete understanding and a thorough grasp of the subject matter as demonstrated by attainment of all learning outcomes. Excellent critique and knowledge of relevant literature and identification of research hypothesis. Well designed experimental approach to test research hypothesis. Show excellent organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate comprehensive, critical, assessment of results and professional presentation of research work.					
	В	B Evidence of near-complete understanding and a good grasp of the subject matter as demonstrated by attainment of the majority of learning outcomes. Good critique and knowledge of relevant literature and identification of research hypothesis. Appropriately designed experimental approach to test research hypothesis. Show good organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate effective, critical, assessment of results and good presentation of research work.				
	C Evidence of adequate understanding and grasp of the subject matter as demonstrated by general but incomplete attainment of most of the learning outcomes. Acceptable critique and knowledge of relevant literature and identification of research hypothesis. Adequately designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate adequate but not necessarily critical, assessment of results and presentation of research work.					
	D Evidence of limited understanding and grasp of the subject matter as demonstrated by incomplete attainment of many of the learning outcomes. Limited critique and knowledge of relevant literature and identification of research hypothesis. Poorly designed experimental approach to test research hypothesis. Show fair organizational and/or analytical skills and laboratory/fieldwork techniques. Demonstrate confused and poorly organized assessment of results and limited presentation of research work.					
	Fail	are not attained. Poor critique and knowled designed experimental approach to test rese	ng and grasp of the subject matter such that most ige of relevant literature and identification of re earch hypothesis. Show little evidence of approp hniques. Demonstrate incorrect interpretation a	esearch hypothesis. Badly oriate organizational and/or		
Course Type	Project-b	ased course				
Course Teaching	Activitie	9S	Details	No. of Hours		
& Learning Activities		/ Self study	formal lectures, seminars & practical work	144		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Disserta	tion		80		
	Oral pre	sentation	research seminar	20		
Course Website	http://ww	w.biosch.hku.hk/ecology/lsc/				
Additional Course		ation of about 9,000 - 12,000 words seminar (20% weighting).	(80% weighting) should be submitted	by April 15th and a		

NVS1301 Environmenta	l life science (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences Quota 40			
Course Co-ordinator	Dr T Vengatesen, Biological Sciences (rajan@hku.hk)			
eachers Involved	Dr T Vengatesen, Biological Sciences			
course Objectives	This course intended for students who wish to understand the fundamentals of environmental biology/life science and importantly the relationship (connection) between environment and life. Here you will learn about the various biological/ecological principles and concepts of environmental science which are needed for critical discussion and evaluation of current global environmental issues including human ecology, urbanization, ecological economics, and climate change.			
Course Contents & Topics	This course is a combination of lectures, group discussion/debate and field trips cum tutorials. We first explore the fundamental interactions between organisms and their environment. We then explore environmental constraints on life at various ecosystems (like marine, freshwater, and terrestrial). Students will also learn how factors such as urbanization, climate change, and anthropogenic impacts affect life at population and ecosystem levels. Similarly, students will be exposed to the incredible interrelationships that are basic to ecological principles and the impact that human development has upon these			

	interrelationships. After learning basics of environmental life science, students will be stimulated to think about current life science issues such as biodiversity loss, organisms adaptation to climate change, tragedy of commons (human ecology) and applied life science topics such as biomaterial science.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand: Life, Environment and their interactions. 2. Appreciate: Species and ecosystem responses to human-induced environmental change. 3. Attain: Ability to critically think and discuss about current environ-life science issues. 4. Be motivated and equipped: to tackle biological environmental science questions and to choose advanced environmental science courses.				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL				
Offer in 2014 - 2015	Y 1st	sem	Exami	nation	Dec
Offer in 2015 - 2016	Y				
Course Grade	A+ to F				
Grade Descriptors	В	Evidence of original thought during the anal critical and multidimensional thinking about all the course learning outcomes. Demonstra critically analyze the real environmental life signed trip skills. Show substantial knowledge and thought of	the study subject. Extensive knowled ate excellent ability to apply what you science issues. Show highly effective during the analysis of environmental	Ige and skills I have learned organizationa I life science	required for attaining I in the class room to al, presentational and issues. Show some
	evidence of some analytical, critical and multidimensional thinking about the study subject. Good knowledge and skills required for attaining all the course learning outcomes. Demonstrate good ability to apply what you have learned in the class room to critically analyze the real environmental life science issues. Show effective organizational, presentational and field trip skills.				
	C Show general but incomplete knowledge and original thought during the analysis of environmental life science issues. Fair knowledge and skills required for attaining all the course learning outcomes. Demonstrate fair ability to apply what you have learned in the class room to critically analyze the real environmental life science issues. Show considerable organizational, presentational and field trip skills.				
	D Evidence to show a minimum knowledge (i.e. knowledge is very incomplete) and thought during the analysis of environmental life science issues. Show insufficient knowledge and skills required for attaining all the course learning outcomes. Demonstrate poor ability to apply what you have learned in the class room to critically analyze the real environmental life science issues. Show very little organizational, presentational and field trip skills.				
	Fail Evidence of meager or inadequate knowledge and understanding of environmental life science issues. Show no evidence of knowledge and skills required for attaining all the course learning outcomes. Demonstrate no ability to apply what you have learned in the class room to critically analyze the real environmental life science issues. Show no evidence of familiarity with relevant reading material and field trip demonstrations, or any knowledge of organizational and presentational skills.				
Course Type	Lecture wi	th laboratory component course			
Course Teaching	Activities	· · ·	Details		No. of Hours
& Learning Activities	Lectures				24
	Field worl	.	3-12 hours field work		12
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)
	Assignme	ents			10
	Examinat				70
	Presentat	ion	group presentation		10
	Test				10
Required/recommended reading and online materials	Appropriat	e reading materials/handouts will be p	rovided during the course.	,	
Course Website	http://www	.biosch.hku.hk/ecology/lsc/			
Additional Course Information	This cours	e will be offered subject to a minimum	enrollment number and availa	ability of tea	ichers.
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ENVS2001 Environment	al field and lab course (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences Quota 30				
Course Co-ordinator	Dr D M Baker, Biological Sciences (dmbaker@hku.hk)				
Teachers Involved	Dr D M Baker, School of Biological Science				
Course Objectives	To introduce students to a broad spectrum of field and laboratory methods for data collection in environmental science. Through exposure to environmental data collection, experimental design, data analysis, interpretation and reporting, students will gain a deeper appreciation of the process that underlies environmental science research and it's relevancy to critical thinking and future careers in the sciences.				
Course Contents & Topics	This course will involve environmental data collection in both field and lat cover basic principles of specific methodologies and relevant application field-based experiential learning. Having an interdisciplinary focus, the custody of the biosphere, encompassing terrestrial, aquatic, and atmosphesion experience with the operation of standard and advanced sampling and	ons in preparation to course will cover toperic systems. Studer	for laboratory and pics relevant to the ents will gain hands		

	basic da	ta analysis and reporting.				
Course Learning Outcomes	On succ	On successful completion of this course, students should be able to:				
	2. Have data.	rstand how scientific data is use a basic understanding of the	techniques and methodologie	s necessary for colle	· ·	
		rstand some of the problems inl rstand how data collected in the				
Pre-requisites (and Co-requisites and (mpermissible combination)		Pass in ENVS1301 Environmental life science or ENVS1401 Introduction to environmental science or EASC1401 Blue planet or BIOL1309 Evolutionary diversity				
Offer in 2014 - 2015	Y 1s	st sem		Examination	No Exam	
Offer in 2015 - 2016	Υ			'		
Course Grade	A+ to F					
Grade Descriptors	Α	of original thought. Apply highly	e subject. Show strong analytical and effective lab / fieldwork skills and telions. Apply highly effective organizati	chniques. Critical use of d	ata and results to draw	
	В					
	С	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Apply moderately effective lab / fieldwork skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply partially effective lab / fieldwork skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Apply minimally effective or ineffective lab / fieldwork skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Laborato	ory and workshop course				
Course Teaching	Activiti	es	Details		No. of Hours	
& Learning Activities	Laborat	cory			30	
	Field wo	Field work			10	
	Project	Project work			20	
	Tutorial	S			12	
	Reading	g / Self study			60	
Assessment Methods and Weighting	Method	is	Details		Weighting in final course grade (%)	
	Assignn	nents			10	
	Laborat	ory reports			20	
	Present	tation			20	
	Project	reports			50	
Course Website	http://wax	ww.biosch.hku.hk/ecology/lsc/	·	'		

ENVS2002 Environmental	data analysis (6 credits)	Academic Year	2014
Offering Department	Biological Sciences	Quota	50
Course Co-ordinator	Dr T C Bonebrake, Biological Sciences (tbone@hku.hk)		
Teachers Involved	Dr T C Bonebrake, School of Biological Science		
Course Objectives	To provide students with the ability to analyze data; especially questions in environmental science. This course will enable studisplay, test and analyze environmental data. The course will all variety of important advanced approaches in analyzing environ geographic information systems, remote sensing, risk assessment	dents to accurately in so introduce students mental data including	terpret, organize to principles of a spatial analysis
Course Contents & Topics	The course will feature lectures on aspects of sampling, dist hypothesis testing in addition to lectures on advanced analysis to qualities inherent to most environmental datasets such as large si will be applied and practiced in environmental science contexts oceanography) using a variety of datasets in a computer labor Statistical Computing' software (a graphical user interface will be of coding or computer science is not required).	oics. Special emphasis ze, multivariate, and s (e.g. chemistry, ecoloratory setting using the	will be placed or patial. All materia ogy, geology and ne 'R Project for
Course Learning Outcomes	On successful completion of this course, students should be able to 1. Accurately interpret methods and approaches in the scientific litt 2. Evaluate critically data analyses in the environmental sciences. 3. Perform standard and appropriate statistical analyses on a varie 4. Work comfortably with large datasets using applied software (e.	erature. ty of data sources.	
	360		

	5. Prese	5. Present results of data analyses in a clear and transparent manner.				
Pre-requisites (and Co-requisites and Impermissible combination)	EASC14	Pass in ENVS1301 Environmental life science or ENVS1401 Introduction to environmental science or EASC1401 Blue planet or BIOL1309 Evolutionary diversity				
Offer in 2014 - 2015	Y 2r	id sem	Examina	tion	May	
Offer in 2015 - 2016	Y		<u>'</u>		<u>'</u>	
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough grasp of the subject and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Apply a highly effective computational skills and techniques for basic statistical analyses. Be able to critically use data and statistical results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial grasp of the subject and skills required for attaining at least most of the course learning outcomes. Present evidence of analytical and critical abilities and logical thinking. Apply effective computational skills and techniques for basic statistical analyses. Be able to correctly use data and statistical results to draw appropriate conclusions. Apply effective organizational and presentational skills.				
	С	outcomes. Present evidence of some an computational skills and techniques for	sp of the subject and skills required for attainalytical and critical abilities and logical thin basic statistical analyses. Demonstrate moward appropriate conclusions. Apply moderate	king. Apply stly correct	moderately effective but some erroneous	
	D	D Demonstrate partial and limited grasp of the subject and skills required for attaining some of the course learning outcomes. Present evidence of some analytical and critical abilities and logical thinking, but with limited analytical and critical abilities. Apply limited or barely effective computational skills and techniques for basic statistical analyses. Demonstrate limited ability to use data and statistical results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.				
	Fail	Present evidence of little or lack of an effective or ineffective computational skil	ubject and skills required for attaining any o alytical and critical abilities, logical or coh is and techniques for basic statistical analys or draw appropriate conclusions. Apply m	erent thinkes. Demor	king. Apply minimally instrate misuse of data	
Course Type	Lecture	with laboratory component course				
Course Teaching	Activiti	Activities Details			No. of Hours	
& Learning Activities	Lectures				24	
	Laboratory		problem-based learning/computer laboratory		24	
	Tutorials				6	
Assessment Methods and Weighting	Method	s	Details		Veighting in final course grade (%)	
	Examin	ation			25	
	Project	report			25	
	Test		problem-based exercises		50	
Required/recommended reading and online materials	New Yor Reimann	a, B. 2012. Biostatistics with R: An	_	-		
	Reference Zhang C	ces: . 2007. Fundamentals of Environmer	ntal Sampling and Analysis. John W	/iley & So	ons, New Jersey.	

ENVS3019 Urban ecology	(6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota	50	
Course Co-ordinator	Dr T C Bonebrake, Biological Sciences (tbone@hku.hk)			
Teachers Involved	Dr T C Bonebrake, School of Biological Science			
Course Objectives	This course will provide students with an understanding and knowledge of the ecology of urban ecosystems. The course will highlight the role of cities in a world under environmental change and rapid development.			
Course Contents & Topics	Ecological systems within cities and cities as ecological systems will both be covered in this course. Ecological concepts unique to or specialized within cities will be covered including sustainability, conservation, health, development, globalization, and restoration. Specific topics will include climate change (e.g. urban heat island effects), invasive species, infectious diseases and pollution. Examples will be taken globally but special emphasis will be placed on Hong Kong.			
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe and evaluate the processes and patterns that characterize 2. Understand biodiversity and ecosystem responses to urbanization. 3. Recognize energy flows within urban ecosystems and how energy u environmental quality. 4. Critically evaluate management and policy solutions to urban ecolog	se and waste improv		
Pre-requisites	Pass in ENVS2001 Environmental field and lab course or ENVS20	02 Environmental d	ata analysis or	

(and Co-requisites and Impermissible combination)	BIOL2306	Ecology and evolution				
Offer in 2014 - 2015	N		Examinati	ion		
Offer in 2015 - 2016	Υ		<u>'</u>	'		
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show strong ar thought, ability to integrate and synthesize	anced level of extensive knowledge and sk lalytical and critical abilities and logical think information, and ability to apply knowledge ghly effective presentational skills. Strong e	ing, with evidence of original to a wide range of complex,		
	В	the course learning outcomes. Show evidence	oad range of knowledge and skills required ence of analytical and critical abilities and le e to familiar and some unfamiliar situation tion to thoughtful and reflective thinking.	ogical thinking, integration of		
	С	learning outcomes. Show evidence of som	mand of knowledge and skills required for a ne analytical and critical abilities and logical oply moderately effective presentational sk g.	thinking, and ability to apply		
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities and little attempt at integration. Show limited ability to apply knowledge to solve problems. Apply limited effectiveness in presentational skills. Lack of attention to thoughtful and reflective thinking.				
	Fail	outcomes. Lack of analytical and critical at	mand of knowledge and skills required for a vilities, logical and coherent thinking. Show v and presentational skills are minimally effec	ery little or no ability to apply		
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)		
	Examination		Mid-term exam (20%), Final exam (30%)	50		
	Presenta	tion		20		
	Project re	eports		30		
Required/recommended reading and online materials	Niemela Processes Reference	Textbooks: Niemela J, Breuste JH, Elmqvist T, Guntenspergen PJ, McIntyre NE (2011) Urban Ecology: Patterns, Processes, and Applications. Oxford University Press, Oxford. References: Gaston KJ (2010) Urban ecology. Cambridge University Press, Cambridge.				
Course Website		v.biosch.hku.hk/ecology/lsc/	,,			
Additional Course Information	This cours	se will be offered subject to a minimur se will be offered in alternative year.	n enrollment number and availability	of teachers.		

LITY 03020 Global challye	ecology (6 credits)	Academic Year	2014	
Offering Department	Biological Sciences	Quota	50	
Course Co-ordinator	Dr C Dingle, Biological Sciences (cdingle@hku.hk)	'		
Teachers Involved	Dr C Dingle, Biological Sciences			
Course Objectives	To introduce students to the ways in which environmental change affects biodiversity from organisms ecosystems. This course will explore the contributions that human population growth and globalization have made to increases in greenhouse gases and associated climate change, biological invasions, lard degradation, disease, and, ultimately, impacts on biological systems.			
Course Contents & Topics	Environmental change is a natural phenomenon, with eco emerging, and disappearing through geologic time with change humans have added to this natural variation, increasing environmental change occurs. This course will focus princip organisms and ecosystems but will also investigate other topics	ges in climatic conditions. the magnitude and spo ally on the effects of cli	The activities eed with whice mate change of	
	use change, biological invasions, and eutrophication. We will exist manifested including climate warming, sea level rise, and of land use change; (3) how globalization has contributed to the sincreases in eutrophication of aquatic ecosystems with a focus investigate how these human-caused stressors affect the revolution of organisms and their impacts on ecosystem function and terrestrial ecosystems.	xplore (1) what climate cha cean acidification; (2) type pread of alien species and s on marine "dead zones" morphology, phenology, c	ange is and how es and extents d disease; and (. The course v listributions, ar	

	change.	n level. tand the differences between climate re of the relationships between humans		and recent climate		
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis or BIOL2306 Ecology and evolution				
Offer in 2014 - 2015	Y 2nd	sem	Examination	May		
Offer in 2015 - 2016	N					
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A	course learning outcomes. Show strong anal thought, ability to integrate and synthesize ir	nced level of extensive knowledge and skills lytical and critical abilities and logical thinking, nformation, and ability to apply knowledge to a nly effective presentational skills. Strong evide	with evidence of original wide range of complex,		
	В	the course learning outcomes. Show eviden	ad range of knowledge and skills required for a ce of analytical and critical abilities and logicato familiar and some unfamiliar situations. on to thoughtful and reflective thinking.	al thinking, integration of		
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective presentational skills. Little evidence of clear attention to thoughtful and reflective thinking.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities and little attempt at integration. Show limited ability to apply knowledge to solve problems. Apply limited effectiveness in presentational skills. Lack of attention to thoughtful and reflective thinking.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	8	Details	No. of Hours		
& Learning Activities						
& Learning Activities	Lectures			24		
& Learning Activities	Lectures		tutorial & 20 hours of problem- based learning	24 44		
& Learning Activities	Tutorials	Self study				
Assessment Methods	Tutorials	Self study		44		
Assessment Methods	Tutorials Reading /	·	based learning	44 100 Weighting in final		
Assessment Methods	Tutorials Reading /	·	Details problem-based exercises (10%),	44 100 Weighting in final course grade (%)		
Assessment Methods	Tutorials Reading / Methods Assignment	ents	Details problem-based exercises (10%),	44 100 Weighting in final course grade (%) 20		
•	Tutorials Reading / Methods Assignme Essay	ents	Details problem-based exercises (10%),	44 100 Weighting in final course grade (%) 20 30		
Assessment Methods	Tutorials Reading / Methods Assignme Essay Examinati Presentat Lovejoy, T CT, USA. Araujo, M. Grimm, N. change an	ents	Details problem-based exercises (10%), continuous assessment (10%) ange and Biodiversity. Yale University imate change affect biodiversity? Sciedman, C.L., Wu J., Bai, X., and Brigg 56-760.	Weighting in final course grade (%) 20 30 40 10 Press, New Haven, ence 313:1396-1397. ps, J.M. 2008. Global		
Assessment Methods and Weighting Required/recommended reading	Tutorials Reading / Methods Assignme Essay Examinati Presentat Lovejoy, T CT, USA. Araujo, M. Grimm, N. change an	ents ion i.E. and Hannah, L. 2005. Climate Cha B., and Rahbek, C. 2006. How does cl B., Faeth, S.H., Golubiewski, N.E., Re d the ecology of cities. Science 319:75 er, W.H. 2006. Global change ecology.	Details problem-based exercises (10%), continuous assessment (10%) ange and Biodiversity. Yale University imate change affect biodiversity? Sciedman, C.L., Wu J., Bai, X., and Brigg 56-760.	Weighting in final course grade (%) 20 30 40 10 Press, New Haven, ence 313:1396-1397. ps, J.M. 2008. Global		

ENVS4110 Environmental	remediation (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences	Quota	30		
Course Co-ordinator	Dr J D Gu, Biological Sciences (jdgu@hku.hk)				
Teachers Involved	Dr J D Gu, Biological Sciences				
Course Objectives	To introduce students with the environmental fate informatio environment To understand the technologies available for environmental and the characteristics of each techniques relevant to the polluto learn the fundamental physical, chemical and biochemical To obtain skills for critical analysis of the recent technological	remediation of pollutants in sutants of concern reactions involved in the reme	soils and water		
Course Contents & Topics	Understanding the types of different pollutants and their fate and aquatic; and relevant strategy of pollution control and tre treatment and phytoremediation; mechanisms of biochemical polychlorinated biphenols, agrichemicals and phthalate este biochemical pathways and the specific genes involved in deformation pathways in bacteria; transport of microorganism survival of introduced organisms; evolution of the degradar remediation techniques; green technologies.	eatment; advanced oxidation, transformation of polyaromaters as well as both metals a toxification; chemotaxis and os and monitoring in subsurface	microbiologica ic hydrocarbor and metalloids engineering th ce environmen		

successful completion of this course, students should be able to:					
1. Explain the remediation technologies available to the type of pollutants of concern in remediation practice.					
 Propose remediation strategies for polluted sites with the best technologies available considering type of pollutants and the cost involved. Differentiate the technologies available for the specific pollutants and the fundamental process in in terms of the catalysts and the effectiveness. Describe several key chemical and biochemical processes used in environmental remediation adequate background information on their history and development. 					
BIOL3109 Environmental m r biology or ENVS3042 Pollut	icrobiology or BIOL3110 Environment	mental toxicology	or BIOL3401		
	E	xamination			
to F					
learning outcomes. Thorough gr logical thinking, with evidence of	ced level of extensive knowledge and skil asp of the subject matter. Show very strong original thought. Apply highly effective lab s and insightful conclusions. Apply highly effe	ganalytical and critical skills and techniques.	I abilities and high Critical use of data		
learning outcomes. Substantial	d range of knowledge and skills required to grasp of the subject. Show evidence of an is and techniques. Correct use of data of ro d presentational skills.	alytical and critical a	bilities and logical		
General but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. General but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.					
Partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
Fail Little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
with laboratory component cou	ırse				
es	Details		No. of Hours		
3			24		
ory			8		
ork			6		
work			6		
3			4		
J / Self study			100		
s	Details		ighting in final urse grade (%)		
nents			10		
ation			50		
ory reports			25		
ation			10		
			5		
Cutcheon & J.L. Schnoor: Phy	toremediation: Transformation and	Control of Contar	ninants (Wiley)		
	 , -				
	minimum enrollment number and a	vailability of teach	ners.		
ir	Cutcheon & J.L. Schnoor: Phy nell & J-D Gu: Environmental M podle.hku.hk/ urse will be offered subject to a	Cutcheon & J.L. Schnoor: Phytoremediation: Transformation and chell & J-D Gu: Environmental Microbiology (Wiley-Blackwell, 2nd ecoodle.hku.hk/	irse will be offered subject to a minimum enrollment number and availability of teach		

ENVS4955 Environmen	ntal science in practice (6 credits)	Academic Year	2014		
Offering Department	Biological Sciences Quota 18				
Course Co-ordinator	Dr M Yasuhara, Biological Sciences (yasuhara@hku.hk)	Dr M Yasuhara, Biological Sciences (yasuhara@hku.hk)			
Teachers Involved	Dr M Yasuhara, Biological Science	Dr M Yasuhara, Biological Science			
Course Objectives	To provide students experiential learning experience in the field primarily based on an array of field studies covering essential ar thesis style report on environmental science topic. Invited gue practitioners may be held.	eas of environmental sci	ience as well as		

Course Contents & Topics		to attend a series of field studies in, and/c	or outside, Hong Kong throughout the	e final academic year.		
	core sam geology/p (2) Natur. Departme farms, Ma Park Visit (3) Enviro strategic research a Technolog (4) Enviro activities, In addition	ential field trip, for example, to Japan (the bling, practical learning of ecological, paraleontology field trip, and other tours and all resource management and conservent, Fish Marketing Organization, local fish in Po RAMSAR Site, Hong Kong Wettlander Centre, and Marine Parks and Reservent and Individual science and technologies: visite landfill sites, power plants, Environment and development of green technology), Capy; and the visiting Environmental Lab: visiting Environmental Science and technology, Capy; and the visiting Environmental Science and technology, Capy; and the visiting Environmental Science and the course includes thesis style report to be provided. Alternatively, students may	aleoecology and environmental probactivities); ation: visiting Agriculture, Fisheries sheries organizations, agriculture/aq dd Park, Hong Kong Organic Resouss; ing water treatment plant, waste wortal Management Division of Productive for Marine Environmental Rescience and other Pl's laboratory, lostudents, and writing a short article of the organization of the production of the productio	olems, environmental s and Conservation uaculture/mariculture urce Centre, Country ater treatment plant, uctivity Council (for earch and Innovative poking into research on the Lab.		
Course Learning Outcomes	1. Recogr 2. Gain kr	ssful completion of this course, students s lize ways of environmental science in pra lowledge of current environmental proble	ctice. ms and solutions.			
	_	and communicate their field observation				
Pre-requisites (and Co-requisites and Impermissible combination)	Science M Students	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major. Students are expected to have satisfactorily completed their Year 3 study in Environmental Science Major. This capstone course is for Environmental Science Major students only.				
Offer in 2014 - 2015	N	N Examination				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Apply highly effective lab / fieldwork skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Apply effective lab / fieldwork skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Apply moderately effective lab / fieldwork skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.					
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply partially effective lab / fieldwork skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Apply minimally effective or ineffective lab / fieldwork skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Laborator	y and workshop course				
Course Teaching	Activitie		Details	No. of Hours		
& Learning Activities	Field wor		Field work and other learning students will take part in at least 66 hours of field trips and other learning 66 hours	66		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Laborato	ry reports	field report	30		
	Presenta	tion	group presentation	30		
	Project re	eports	individual report	40		
Course Website	http://www	v.biosch.hku.hk/ecology/lsc/				
Additional Course Information	Some trip own trave (please co	s will be organized in reading weeks, an I cost for the residential field trip. ontact us for details and financial difficulty se will be offered subject to a minimum er).			

ENVS4966 Environmental science internship (6 credits) Academic Year		2014			
Offering Department	Biological Sciences	Biological Sciences Quota			
Course Co-ordinator	Dr C Dingle, Biological Sciences (cdingle @hku.hk)	or C Dingle, Biological Sciences (cdingle @hku.hk)			
Teachers Involved	Dr C Dingle, Biological Sciences All Academic Staff, Biological Sciences				
Course Objectives	To offer students the opportunities to gain work experience in a	o offer students the opportunities to gain work experience in applying knowledge and skills gained in the			

	study of the	e major to the real work environmen	t.			
Course Contents & Topics	as instruct students w member of	Students will be supervised by a staff member (the Internal Supervisor) within the University of Hong Kong as instructed by the Internal Supervisor. In the case of the work being carried out in an external agency, students will be supervised by a staff member of the external agency (the External Supervisor) and a staff member of the University (the Internal Supervisor). The work to be performed by students will normally be instructed by the External Supervisor, with prior agreement of the Internal Supervisor.				
Course Learning Outcomes	On succes	sful completion of this course, stude	nts should be able to:			
	2. Acquire	1. Gain at least 4 weeks of work experience environmental-related firm or the Government. 2. Acquire an understanding and appreciation of the real work environment. 3. Have some experience with applying learned knowledge to solving real world problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	Science M Students a	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental Science Major. Students are expected to have satisfactorily completed their Year 3 study in Environmental Science Major. This capstone course is for Environmental Science Major students only.				
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam	
Offer in 2015 - 2016	Υ					
Course Grade	Pass/Fail					
Grade Descriptors	Pass Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work required in the job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s), colleagues, and clients in the job. Successfully fulfills the requirements set out in the Course Description regarding working hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating excellent performance in the above would be awarded a grade of "Distinction".					
	Fail Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the job or assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s), other colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding working hours, written and oral report, or evaluation by supervisor(s), etc.					
Course Type	Internship					
Course Teaching	Activities Details			No. of Hours		
& Learning Activities	Internship	work	it is expected that work at least 160 equivalent of 4 we	hours (or the	160	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Written re	port	written report, feedback and oral	employer's presentation	100	
Course Website	http://mood	dle.hku.hk/				
Additional Course Information	equivalent Students a those who Satisfactor internship Distinction obtain the Enrolment	of this course is not conducted vine relevant Department/School of	a staff member. Impleted their Year 3 stude The counted towards the ranscript. This course and to enrol in this course at the online course se	idy. Special cons e Capstone requ will be assessed se should contact lection system at	ideration be given to irrement. Details of on "Pass, Fail and the Department to and should be made	

CAES1000 Core Unive	rsity Engli	sh (6 credits)		Academic Year	2014	
Offering Department	English			Quota		
Course Co-ordinator	Mr S Boy	nton, English (sboynton@hku.hk)				
Teachers Involved	Mr S Boy	nton, Centre for Applied English Studio	es			
Course Objectives						
Course Contents & Topic	proficience for the C spoken a manner a also com vocabula students	University English (CUE) course aircy in the university context. CUE focus ommon Core Curriculum. These income written academic texts, express and search for and use academic souplete four online-learning modules they, citation and referencing skills and to participate more effectively in their experience.	ses on developing students lude the language skills no academic ideas and concepting irces of information in their irough the Moodle platform understanding and avoiding	s' academic Englis eeded to understa ots clearly and in writing and speak on academic gra g plagiarism. This	h language skills and and produce a well-structured ing. Students will mmar, academic course will help	
Course Learning Outcomes	 Identif demonstr Form a Argue speaking 	entify and distinguish between main ideas and supporting details in lectures and written texts are instrate an understanding of the arguments / facts expressed; and express personal opinions through critical reading and listening; gue for and defend a position in a clear and structured way using academic sources, through writing asking; and monstrate control of grammatical accuracy and lexical appropriacy in academic communication.				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ		'			
Course Grade	A+ to F					
Grade Descriptors	В	appropriately structured. Students can clearly and concisely explain academic concepts and critically argue for a detailed position. Students always use appropriate academic sources to support their ideas in writing and speaking. They cite and reference correctly at all times. Students demonstrate an ability to fully comprehend and critically interpret spoken and written texts. Written language contains very few, if any, systematic errors in grammar and vocabulary. Spoken language is always comprehensible and fluent. B Good to very good result. Students are able to produce spoken and written academic texts which are appropriately				
		structured with only minor errors. Students can almost always clearly and concisely explain academic concepts and almost always critically argue for a detailed position. Students almost always use appropriate academic sources to support their ideas in writing and speaking. They cite and reference correctly with only a few non-systematic errors. Students can comprehend and interpret texts with ease, although they may miss some implied meanings and opinions. Written language is mostly accurate but contains a few systematic errors in complex grammar and vocabulary. Spoken language is mostly comprehensible and fluent.				
	С	Satisfactory to reasonably good result. Spoken and written academic texts produced by students are sometimes not-well structured but there is some evidence of this ability. Students are sometimes unable to clearly and concisely explain academic concepts. While they can argue for a position, it is not very detailed and tend to be simplistic rather than critical. Students sometimes use sources which are nonacademic and/or not appropriate to support their ideas in writing and speaking. There are some systematic errors in citation and referencing but also evidence of correct systematic use. Students have some difficulty comprehending and critically interpreting texts. They can always understand the main ideas but may miss some of the writer's views and attitudes. Written language is sometimes inaccurate, although errors, when they occur, are more often in complex grammar and vocabulary and there is some evidence of control of simple grammatical structures. Spoken language is generally comprehensible and fluent but at times places strain on the listener.				
	D	Barely satisfactory result. Spoken and written academic texts produced by students are often inappropriately structured but there may be some evidence of this ability. Students are often unable to clearly and concisely explain academic concepts and argue for a position. There is some evidence of an ability to explain academic concepts but not to critically argue for a position. Students often use sources which are nonacademic and/or not appropriate to support their ideas in writing and speaking. There are many systematic errors in citation and referencing however there is evidence of an understanding of some of the conventions of citation and referencing. Students often have difficulty comprehending and interpreting texts, sometimes failing to understand the main ideas and writer's views and attitudes. Written language is often inaccurate containing errors in a range of simple and complex grammar and vocabulary. Spoken language is only sometimes comprehensible and fluent, and strain is frequently placed on the listener.				
	Fail	Unsatisfactory result. Productive skills a assessments. Texts are unstructured and u errors in almost every sentence. Spoker attempted or contain plagiarism.	unclear. Students are unable to follow	low and interpret texts.	There are language	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				30	
	Tutorials				6	
	Reading	/ Self study			84	
Assessment Methods and Weighting	Method	5	Details		/eighting in final ourse grade (%)	
	Examina	tion			35	
	Assignm	ents			65	

CAES9820 Academic Engli	ish for scie	ence students (6 credits)		Academic Year	2014	
Offering Department	English			Quota		
Course Co-ordinator	Mr S Boyn	iton, English (sboynton@hku.hk)				
Teachers Involved	Mr S Boyn	ton, Centre for Applied English Studies	s			
Course Objectives	Science F spoken Er general a audience.	This six credit English-in-the-Discipine course will be offered to second year students studying in the Science Faculty. This course will help students develop the necessary skills to use both written and spoken English within their studies. Students will learn to better communicate and spontaneously discuss general and scientific concepts within their division, with other scientists as well as to a larger studience. Particular emphasis will be placed on enabling students to identify their own language needs and develop appropriate self-learning strategies to improve their proficiency.				
Course Contents & Topics	 Finding, Compiling Contrasti Writing for Organizing grammar; Critically 	Topics covered in the course will be: - Finding, evaluating and using appropriate academic source materials; - Compiling an academic bibliography; - Contrasting academic and popular genres; - Writing for a specific audience, including stance, shared knowledge, levels of formality; - Organizing and articulating ideas in an academically suitable format including appropriate vocabulary and grammar; and - Critically examine their own language proficiency and analyze how that relates to their ability to perform successfully within their discipline. Developing self-directed learning strategies.				
Course Learning Outcomes	On succes	successful completion of this course, students should be able to:				
	Production disciplinary	 Identify and summarize disciplinary sources related to a specified topic. Produce texts (written and spoken) appropriate for a cross-disciplinary audience based on their disciplinary knowledge. Identify their own language learning needs and implement a plan to meet those needs. 				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL	NIL				
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Excellent result. Consistently demonstrates ability to summarize salient points accurately from appropriate and reliable sources using original language. Text uses sources appropriately and demonstrates accurate and appropriate grammatical, lexical and organizational characteristics. Language learning needs are clearly identified and aligned with evidence of planning, self-study and reflection. B Good to very good result. Usually demonstrates ability to summarize salient points accurately using mostly original language. Text mostly uses sources appropriately and demonstrates mostly accurate and appropriate grammatical, lexical and organizational characteristics. Language learning needs are stated with some reference to evidence of planning and reflection although there is some misalignment between goals and self-study completed.					
	С	Satisfactory to reasonably good result. Demonstrates some ability to summarize salient points using mostly original language although some inaccuracies are present. Text uses some sources appropriately and demonstrates appropriate but simple grammatical and lexical characteristics with some organizational flaws. Language learning needs are stated with some limited evidence of planning and reflection but goals and self-study are misaligned.				
	D	Barely satisfactory result. Demonstrates a limited ability to summarize salient points from sources with inaccurac and little original language. Text uses sources inappropriately and demonstrates grammatical inaccurac inappropriate lexical choices and organizational flaws. There is a minimal statement of language learning nee planning and reflection with little or no apparent alignment between goals and self-study.				
	Fail	Fail Unsatisfactory result. Does not demonstrate ability to summarize salient points identify, interpret or appropriatel paraphrase reliable sources. Text uses no sources and demonstrates serious grammatical, lexical and/o organizational errors. Does not demonstrate any meaningful attempt to identify language learning needs o implement a plan.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Tutorials		seminars		36	
	Reading /	Self study			120	
	Assessm	ent	independent learni	ng work	84	
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)	
	Test				30	
	Assignme	ents	independent learni	ng work	25	
	Essay		other genres of writ	ting	45	
	-	Essay other genres of writing 45 Course materials to be provided electronically through course website.				
Required/recommended reading and online materials	Course ma	aterials to be provided electronically the	rough course website			
reading		aterials to be provided electronically thehku.hk/caes9820/	rough course website			

	or Chemistry	(6 credits)		Academic Year	2014
Offering Department	Chemistry			Quota	150
Course Co-ordinator	Dr A P L T	ong, Chemistry (apltong@hku.hk)			
Teachers Involved	Dr A P L T	ong, Chemistry			
Course Objectives	are interes	e aims to provide students who do not ted in exploring Chemistry further, with pts of chemistry.			
Course Contents & Topics	Elements, properties;	Chemistry: Matter and Measurement (2 compounds, and mixtures; physical measuring mass, length, volume and concept and stoichiometry; solutions figures.	properties of matte d temperature; atom	c structure and su	batomic particles
		ases: Their Properties and Behaviour ure; the gas laws; the ideal gas law a		netry; the kinetic-m	olecular theory o
	Topic 3: Chemical Bonding and Structures (7 hours) Covalent, ionic and metallic bonds; bond energy and chemical change; electronegativit Lewis structures of molecules and ions; VSEPR Theory and molecular shape.				and bond polarity
	Physical s state: stru	ntermolecular Forces: Liquids, Solids, a tates and phase changes; types of in cture, properties, and bonding; adva aterials and polymeric materials.	ntermolecular forces	properties of liqui	
	The equilib	hemical Equilibrium (4 hours) orium state and the equilibrium constar on quotient; Le Chelier? Principle	nt; the equilibrium lav	v: calculation of equ	uilibrium constant
	Topic 6: Introductory Organic Chemistry (9 hours) Homologous series and nomenclature; isomerism; typical reactions of selected functional groups.				
Course Learning Outcomes	On succes	sful completion of this course, student	s should be able to:		
	solids, the equilibria. 3. Demons groups of 4. Apply the	strate knowledge and understanding nature of gases, phase changes, che strate a basic knowledge of nomenclatorganic compounds. The theories and concepts introduced in	mical bonding and sure, isomerism, and	tructures, and the r	nature of chemical various functions
	5. Organiz	s and rationalize trends. e and present chemical ideas in a clea strate awareness and appreciation of ife.		nt way.	•
and Co-requisites and	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course coo	e and present chemical ideas in a clea strate awareness and appreciation of ife. r above in HKDSE Combined Scienc	the relevant applicate with Chemistry coaking this foundation	nt way. Itions of chemistry	in society and in rated Science, o
and Co-requisites and mpermissible combination)	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course coo	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science, without such background but keen on tordinator for consideration, dents with Level 3 or above in HKDSE	the relevant applicate with Chemistry coaking this foundation	nt way. Itions of chemistry	in society and in rated Science, o
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course coo Not for stu	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science, without such background but keen on tordinator for consideration, dents with Level 3 or above in HKDSE	the relevant applicate with Chemistry coaking this foundation	ont way. Itions of chemistry Itions of chemistry Itions of chemistry Itining the chemistry course in the cours	in society and in rated Science, or may approach the
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course coc Not for stu Y 1st	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science, without such background but keen on tordinator for consideration, dents with Level 3 or above in HKDSE	the relevant applicate with Chemistry coaking this foundation	ont way. Itions of chemistry Itions of chemistry Itions of chemistry Itining the chemistry course in the cours	in society and in rated Science, o may approach th
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course coo Not for stu Y 1st:	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science, without such background but keen on tordinator for consideration, dents with Level 3 or above in HKDSE	the relevant applicate with Chemistry or aking this foundation Chemistry. ed level of extensive known rasp of the subject. Demoving the subject of a wide range of the subject of a wide range of the subject.	nt way. Itions of chemistry Itination Itination Itination Itination Itination Itination Itination Itination	in society and in rated Science, o may approach the Dec
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And Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course v course so Not for stu Y A+ to F	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science without such background but keen on tordinator for consideration. dents with Level 3 or above in HKDSE sem Demonstrate thorough mastery at an advance course learning outcomes. Show thorough gand logical thinking, with ability to apply known Apply highly effective organizational and pressure personners. Show substantial command of a broat the course learning outcomes. Show substantial command of about the course learning outcomes. Show substantial command of about the course learning outcomes. Show substantial command of about the course learning outcomes. Show substantial command of a broat the course learning outcomes. Show substantial command of a broat the course learning outcomes. Show substantial command of a broat the course learning outcomes. Show substantial command of a broat the course learning outcomes. Show substantial command of a broat the course learning outcomes. Show about the course learning outcomes and the course learning outcomes. Show about the course learning outcomes are course learning outcomes.	the relevant applicate the relevant applicate with Chemistry or aking this foundation. Chemistry. ed level of extensive known rasp of the subject. Demoved the subject. Demoved the subject of the subje	nt way. Itions of chemistry	in society and in rated Science, o may approach the Dec ed for attaining all the all and critical abilities unfamiliar situations. Ining at least most of analytical and critical ations. Apply effectives g most of the course of some analytical and critical attentions.
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course co Not for stu Y A+ to F A B	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science without such background but keen on the product of the consideration. The consideration is dents with Level 3 or above in HKDSE is sem Demonstrate thorough mastery at an advance ourse learning outcomes. Show thorough goand logical thinking, with ability to apply known in the course learning outcomes. Show substant abilities and logical thinking, and abilities and logical thinking and abilities of some coherent and logical thinking apply knowledge to solve problems. Apply limited commended to solve problems.	the relevant application the relevant application of the with Chemistry or aking this foundation. Chemistry. ed level of extensive knowns of the subject. Demonstrational skills. d range of knowledge and tail grasp of the subject. Day knowledge to familiar a sund of knowledge and skillete grasp of the subject. Ility to apply knowledge and skills requested to apply knowledge and skills requested to apply the total part of some relevant to the property of the subject. In the subject of the subject. In the subject of the subject. In the subject of the subject of the subject. In the subject of the sub	nt way. Itions of chemistry	in society and in rated Science, or may approach the Dec Dec defor attaining all the all and critical abilities unfamiliar situations. Apply effective growth of the course of some analytical and critical attons. Apply moderately for the course learning subject. Demonstrate Show limited ability to attonal skills.
And Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	5. Organiz 6. Demons everyday I Level 3 or equivalent Students v course cor Not for stu Y A+ to F A B	e and present chemical ideas in a cleastrate awareness and appreciation of ife. r above in HKDSE Combined Science without such background but keen on the ordinator for consideration. dents with Level 3 or above in HKDSE sem Demonstrate thorough mastery at an advance course learning outcomes. Show thorough good and logical thinking, with ability to apply known Apply highly effective organizational and present abilities and logical thinking, and ability to apport organizational and presentational skills. Demonstrate substantial command of a broad the course learning outcomes. Show substant abilities and logical thinking, and ability to apport organizational and presentational skills. Demonstrate general but incomplete comma learning outcomes. Show general but incomperitical abilities and logical thinking, and abilities organizational and presentational skills. Demonstrate partial but limited command of outcomes. Show partial but limited grasp, will evidence of some coherent and logical thinking weight outcomes. Show partial but limited grasp, will evidence of some coherent and logical thinking.	the relevant applicate the relevant applicate with Chemistry or aking this foundation. Chemistry. ed level of extensive knowns of the subject. Demonstrational skills. d range of knowledge and skills grasp of the subject. Day knowledge to familiar a sund of knowledge and skillete grasp of the subject. It is to apply knowledge to a subject. It is to apply knowledge to apply knowledge to apply knowledge and skills request to apply knowledge and skills request to apply the subject. It is to apply knowledge to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply the subject. It is to apply knowledge and skills request to apply knowledge and skills.	nt way. Itions of chemistry	in society and in rated Science, or may approach the Dec and for attaining all the all and critical abilities unfamiliar situations. Apply effective and some analytical and critical ations. Apply effective from an analytical and critical ations. Apply moderately of the course learning subject. Demonstrate Show limited ability to ational skills.
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	Reading / Self study		100		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments		20		
	Examination		65		
	Test		15		
Required/recommended reading and online materials	1) Petrucci; Herring; Madura; Bissonnette: General Chemistry: Principles and Modern Applications, latest edition, Pearson 2) Moore; Stanitski; Jurs: Chemistry: The Molecular Science, latest edition, Brookes/Cole 3) Zumdahl; Zumdahl: Chemistry, latest edition, Brookes/Cole				
Additional Course Information	Suggested follow-up course: CHEM1042 General	l Chemistry			

CHEM1042 General chemis	stry (6 cred	its)	Academic Year	2014		
Offering Department	Chemistry		Quota	260		
Course Co-ordinator	Dr A P L To	ong, Chemistry (apltong@hku.hk)				
Teachers Involved	Dr A P L To	ong, Chemistry				
Course Objectives	chemistry. including v some basic	e aims to provide students with a solid foundation of It also provides students with hands-on training of olumetric analysis, preparation, purification and charac c instrumental methods. Students will be equipped with powledge and skills for further studies in Chemistry.	basic laboratory skills cterization of chemica	and technique I substances an		
Course Contents & Topics	elements a subatomic measurem. Atoms: the of the hydr atomic orbi ionization e Chemical I molecular s Energetics spontaneity integrated a Solutions a solubility. Acid-Base ionization of	its nature and method: physical properties; chemic and compounds; measuring mass, length, volume an particles; the mole concept and stoichiometry; solution and significant figures. quantum world: electromagnetic radiation and matter; Fogen atom; the quantum mechanical model of the atom tals; shapes of atomic orbitals; electron configurations; energies, and electron affinities. conding and structures: review on covalent, ionic an structures (VSEPR, VB theory, MO theory). and kinetics of reactions: heat and work; the first law of changes. Reaction rate; factors that influence regate laws; temperature and reaction rate; reaction mechand their properties: solutions; energy changes and equilibria: acid-base concepts; equilibria in solutions constants; molecular properties and acid strength; acid-icid-base titrations.	and temperature; atomons and concentration on and concentration; quantum numbers, experiodic trends: atomond metallic bond. Cover of thermodynamics; caction rate; rate laws anisms; catalysis. the solution process; so of weak acids and	nic structure and s; uncertainty in the Bohr mode energy levels, and c radii, ionic radii ralent bonds and theat of reactions differential and factors affecting in weak bases		
Course Learning Outcomes	1. Demons concepts o 2. Demons well as aqu 3. Apply the predictions 4. Carry ou and interpress. Organize	sful completion of this course, students should be able to trate a basic knowledge and understanding of the mic of chemical bonding and their relationships with the bulk of trate knowledge and understanding in relation to therm deous equilibria including acid-base equilibria. The theories and concepts introduced in the course to solve and rationalize trends. The transport of the course to solve and evaluate the experimental data. The and evaluate the experimental data. The and present chemical ideas in a clear, logical and concept and evaluate the proper procedures, recorded the trate awareness and appreciation of the relevant appose.	roscopic nature of ato properties of matter. nodynamics and kineting problems, perform of experimental oberserverent way.	cs of reactions a calculations, mak rations accurately		
Pre-requisites (and Co-requisites and mpermissible combination)		above in HKDSE Chemistry or equivalent; students out having a pass in CHEM1041 Foundations of chemis				
Offer in 2014 - 2015	Y 1st s	em 2nd sem	Examination	Dec May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show thorough grasp of the subject. Demonstrate strong analytical and critical abilities and logical thinking, with ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Show highly effective lab skills and techniques. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show substantial grasp of the subject. Demonstrate evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Show effective lab skills and techniques. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show general but incomplete grasp of the subject. Demonstrate evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Show moderately effective lab skills and techniques. Apply moderately effective organizational and presentational skills.					

		effective organizational and presentati	onal skills.		
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the count outcomes. Show evidence of little or no grasp of the knowledge and understanding of the subject. Lack and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to so Demonstrate minimally effective or ineffective lab skills and techniques. Organization and presentation minimally effective or ineffective.			
Course Type	Lecture wi	ith laboratory component course			
Course Teaching & Learning Activities	Activities	S	Details	No. of Hours	
	Lectures			24	
	Laboratory			24	
	Tutorials			6	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Examination			60	
	Laboratory reports			25	
	Test			15	
Required/recommended reading and online materials	edition, Pe) Petrucci; Herring; Madura; Bissonnette: General Chemistry: Principles and Modern Applications, lates edition, Pearson 2) Moore; Stanitski; Jurs: Chemistry: The Molecular Science, latest edition, Brookes/Cole 3) Zumdahl; Zumdahl: Chemistry, latest edition, Brookes/Cole			
Additional Course Information	Laboratory pass this o		nts must complete ALL expe	riments and laboratory reports to	

CHEM2041 Principles of c	hemistry (6 credits)	Academic Year	2014		
Offering Department	Chemistr	y	Quota	280		
Course Co-ordinator	Dr I K Ch	u, Chemistry (ivankchu@hku.hk)				
Teachers Involved		Yuen, Chemistry u, Chemistry				
Course Objectives	This cour	This course is designed for non-chemistry major students covering basic principles of chemistry.				
Course Contents & Topics	Thermody capacities entropy, of Transport conductic Chemical measurer Chemical Equilibria chemical Introducti diprotic a Introducti identificati	Kinetics: rate of reactions, orders of reactions, rate ment of reaction rates, enzyme kinetics, enzyme inhibit Equilibrium; in single-, and two component systems: phase transi potential; liquid/liquid systems; on to acids and bases: calculation on concentration of polyprotic acids, activity; on to Spectroscopy: UV/Visible absorption spectroscotion of functional groups; NMR Spectroscopy, Larmor coupling multiplicities; Mass Spectrometry, isotopic	second and third laws of action; in liquids and viscosity laws, reaction mechanision, temperature effect on tions, phase diagrams and different chemical specipy, Beer-Lambert Law; I frequency & chemical sh	of liquids, ioni im, experimenta rates; d the phase rule ies in a solution R Spectroscopy ift, peak integra		
Course Learning Outcomes	Explai properties	essful completion of this course, students should be ab- in the principles of the thermochemistry, chemical is of solutions and gases. In the principles of the spectroscopy, and spectrometry.	kinetics, chemical equil	ibrium, physica		
Pre-requisites (and Co-requisites and Impermissible combination)	Not for so course; a	tudents who have passed in CHEM2441 Organic ch nd tudents who have passed in CHEM2541 Physical ch	emistry I or have already	enrolled in the		
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemistry, instrumentations and applications of spectrometry and spectroscopy for chemical analysis. Show strong ability to apply and integrate knowledge and theory, and strong ability to analyze problems related to general chemistry and spectroscopy.					
	B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemistry, instrumentations and applications of spectrometry and spectroscopy for chemical analysis. Show evidence to apply and integrate knowledge and theory, and ability to analyze problems					

		related to general chemistry and spectroscopy.			
	С	principles and theories relating to the	modern chemistry, instrumentations now evidence of some abilities to ap	rstanding of essential facts, concepts, s and applications of spectrometry and ply and integrate knowledge and theory, spectroscopy.	
	D	D Demonstrate partial but limited command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemistry, instrumentations and applications of spectrometry and spectroscopy for chemical analysis. Show evidence of limited abilities to apply and integrate knowledge and theory, and limited ability to analyze problems to most familiar situations related to general chemistry and spectroscopy.			
	Fail				
Course Type	Lecture-b	ased course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)	
	Assignm	ents		25	
	Examina	tion		75	
Required/recommended reading and online materials	Spectroso	copy for the biological science, by	Gordon G. Hammes, Wiley-In	terscience (2005)	

CHEM2042 Principles of cl	hemistry fo	or pharmacy students (6 credits)	Academic Year	2014		
Offering Department	Chemistry	1	Quota	30		
Course Co-ordinator	Dr A M Y	Yuen, Chemistry (maiyan@hku.hk)				
Teachers Involved	Dr A M Y	Yuen, Chemistry				
Course Objectives	This cours	se is designed to introduce basic principles of chemistry	to Bachelor of Pharmacy	students.		
Course Contents & Topics	Chemical mechanis in pharma Chemical Acids and acids, act Basic Sp	as Laws, thermodynamics, physical properties of liquid and gases; hemical Kinetics: rate of reactions, effect of temperature, orders of reactions, rate laws, reactionechanism, experimental measurement of reaction rates, enzyme kinetics, enzyme inhibition; application pharmacokinetics hemical Equilibrium; cids and bases: pH values in aqueous solution, importance in biological systems, diprotic and polyprocids, activity; asic Spectroscopy and Spectrometry Techniques and their applications: UV/Visible absorptionsectroscopy; NMR spectroscopy; Mass Spectrometry.				
Course Learning Outcomes	1. Demon chemical sciences. 2. Demon	ssful completion of this course, students should be able to a strate knowledge and understanding of basic principles equilibrium, physical properties of solutions and gase astrate knowledge and understanding principles and of some in pharmaceutical sciences.	s of thermochemistry, cles that are essential to	pharmaceutic		
Pre-requisites (and Co-requisites and Impermissible combination)	Not for stu	HEM1042 General chemistry; and udents who have passed in CHEM2041 Prinicples of che rse is for BPharm students only)	emistry, or already enrolle	ed in this cour		
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough knowledge and understanding of essential the modern chemistry, instrumentations and applications of speci. Show strong ability to apply and integrate knowledge and theory, general chemistry and spectroscopy.	trometry and spectroscopy for	chemical analysi		
		B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, princi theories relating to the modern chemistry, instrumentations and applications of spectrometry and spectro chemical analysis. Show evidence to apply and integrate knowledge and theory, and ability to analyze related to general chemistry and spectroscopy.				
	В	theories relating to the modern chemistry, instrumentations and a chemical analysis. Show evidence to apply and integrate knowle	applications of spectrometry ar	nd spectroscopy f		
	С	theories relating to the modern chemistry, instrumentations and a chemical analysis. Show evidence to apply and integrate knowle	applications of spectrometry and ability to and understanding of essenti nentations and applications of its to apply and integrate known applications to apply and integrate known applications to apply and integrate known applications.	nd spectroscopy for analyze problem all facts, concepts for spectrometry ar		
		theories relating to the modern chemistry, instrumentations and a chemical analysis. Show evidence to apply and integrate knowle related to general chemistry and spectroscopy. Demonstrate general but incomplete command of knowledge a principles and theories relating to the modern chemistry, instrunspectroscopy for chemical analysis. Show evidence of some ability	applications of spectrometry and added and theory, and ability to and understanding of essential nentations and applications of ties to apply and integrate knonistry and spectroscopy. Berstanding of essential facts, and applications of spectrometriand integrate knowledge and integrate knowledge and	nd spectroscopy for analyze problem all facts, concept f spectrometry are wiedge and theory concepts, principlly y and spectroscopy theory, and limits		

	theory, and little or no abili spectroscopy.	ty to analyze problems to most familiar situation	ns related to general chemistry and		
Course Type	Lecture-based course				
Course Teaching	Activities	Details	No. of Hours		
& Learning Activities	Lectures		36		
	Tutorials		12		
	Reading / Self study		100		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments	including test	25		
	Examination		75		
Required/recommended reading and online materials	Spectroscopy for the biological scie	nce, by Gordon G. Hammes, Wiley-Inter	rscience (2005)		

CHEM2241 Analytical che	mistry i (6	redits) Acade	demic Year	2014		
Offering Department	Chemistry	Quota	ta	100		
Course Co-ordinator	Dr W T Cl	n, Chemistry (wtchan@hku.hk)				
Teachers Involved	Dr W T Cl	an, Chemistry				
Course Objectives	measuren will be dis and stoic	e aims to introduce the basic principles of chemical analysis. ent, including error analysis, quality assurance and calibration, darnussed with reference to methods of chemical analysis that are beometric reactions. The laboratory classes will include experiment of data acquisition and processing as well as chemical analysis.	ata acquisition based on che ments demon	and processing mical equilibrium strating modern		
Course Contents & Topics		ent: analog and digital measurement, accuracy and precision, com curves and least square method for linear plots	mparing mean	s and deviations		
	Quality as	urance: validation of analytical procedures				
		Chemical equilibrium and chemical analysis: aqueous solution and chemical equilibrium; analysis base reactivity, complexation reactivity, precipitation reactivity				
Course Learning Outcomes	Explain Explair and precipant	On succesful completion of this course, students should be able to: 1. Explain the basic principles of chemical measurements. 2. Explain the principles of classical methods of chemical analysis including neutralization, complexation and precipitation titrimetry. 3. Use laboratory apparatus for chemical analysis.				
Pre-requisites	Pass in CHEM1042 General chemistry					
mpermissible combination)	Y 1st	em 2nd sem Exam	nination	Dec May		
mpermissible combination) Offer in 2014 - 2015	Y 1st	em 2nd sem Exam	mination	Dec May		
mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016		em 2nd sem Exam	nination	Dec May		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Υ	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ablility to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills.	ical abilities, logic and unfamiliar situ	cal and independent ations. Demonstrate		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y A+ to F	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ablility to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results	ical abilities, logiond unfamiliar situts to draw approabilities and logiliar and some u	cal and independent ations. Demonstrate priate and insightful ical thinking, some nfamiliar situations.		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y A+ to F	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ability to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familia Demonstrate proficient lab skills and techniques and correct use of data and rest	ical abilities, logic and unfamiliar situ ts to draw appro abilities and log liar and some u sults to draw app f some analytical byledge to most erroneous use o	cal and independent ations. Demonstrate priate and insightful ical thinking, some nfamiliar situations. ropriate conclusions. abilities and logical familiar situations. f data and results to		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F A B	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ability to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familia Demonstrate proficient lab skills and techniques and correct use of data and results of the subject. Show evidence of thinking, little evidence of independent thinking, and ability to apply knowledge to appl	ical abilities, logic and unfamiliar situ ts to draw appro abilities and log liar and some usults to draw app f some analytical swledge to most erroneous use o and presentation sition, of the subject tied ability to use data	cal and independent ations. Demonstrate priate and insightful iical thinking, some nfamiliar situations. ropriate conclusions. abilities and logical familiar situations. f data and results to kitils. tt. Show evidence of y knowledge to solve a and results to draw		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y A+ to F A B C	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ablility to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familia Demonstrate proficient lab skills and techniques and correct use of data and results of the strong proficient lab skills and techniques and correct use of data and results of thinking, little evidence of independent thinking, and ability to apply known Demonstrate adequate lab skills and techniques and mostly correct but some of draw appropriate conclusions. Demonstrate moderately effective organization and Demonstrate partial but limited grasp, with retention of some relevant informatic limited analytical abilities, little or no evidence of independent thinking, and limited problems. Demonstrate partially effective lab skills and techniques and limited l	ical abilities, logicand unfamiliar situsts to draw appro abilities and logiliar and some usults to draw app f some analytical swledge to most erroneous use o and presentation sition, of the subject ted ability to use data nd presentation si subject. Show littly to apply ability to apply apply actions.	cal and independent ations. Demonstrate priate and insightful ical thinking, some nfamiliar situations. repriate conclusions. abilities and logical familiar situations. If data and results to kills. at. Show evidence of y knowledge to solve and results to draw kills. er or no evidence of knowledge to solve of data and results to solve of data and results.		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F A B C D Fail	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ability to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familia Demonstrate proficient lab skills and techniques and correct use of data and results of the subject organization and presentation skills. Demonstrate effective organization and presentation skills. Demonstrate general but incomplete grasp of the subject. Show evidence of thinking, little evidence of independent thinking, and ability to apply knowledge appropriate conclusions. Demonstrate moderately effective organization and Demonstrate partial but limited grasp, with retention of some relevant informatic limited analytical abilities, little or no evidence of independent thinking, and limited a appropriate conclusions. Demonstrate limited or barely effective organization and Demonstrate little or no grasp of the knowledge and understanding of the sul analytical abilities, logical and independent thinking, and very little or no a problems. Demonstrate minimally effective or ineffective lab skills and technique.	ical abilities, logicand unfamiliar situsts to draw appro abilities and logiliar and some usults to draw app f some analytical swledge to most erroneous use o and presentation sition, of the subject ted ability to use data nd presentation si subject. Show littly to apply ability to apply apply actions.	cal and independent ations. Demonstrate priate and insightful ical thinking, some nfamiliar situations. repriate conclusions. abilities and logical familiar situations. If data and results to kills. at. Show evidence of y knowledge to solve and results to draw kills. er or no evidence of knowledge to solve of data and results to solve of data and results.		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	Y A+ to F A B C D Fail	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ability to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familiar Demonstrate proficient lab skills and techniques and correct use of data and rest Demonstrate effective organization and presentation skills. Demonstrate general but incomplete grasp of the subject. Show evidence of thinking, little evidence of independent thinking, and ability to apply know Demonstrate adequate lab skills and techniques and mostly correct but some edraw appropriate conclusions. Demonstrate moderately effective organization and Demonstrate partial but limited grasp, with retention of some relevant informatic limited analytical abilities, little or no evidence of independent thinking, and limite problems. Demonstrate partially effective lab skills and techniques and mostrate partially effective lab skills and technique appropriate conclusions. Demonstrate limited or barely effective organization and Demonstrate little or no grasp of the knowledge and understanding of the sul analytical abilities, logical and independent thinking, and very little or no a problems. Demonstrate minimally effective or ineffective lab skills and technique and/or unable to draw appropriate conclusions. Demonstrate incherent organization.	ical abilities, logicand unfamiliar situsts to draw appro abilities and logiliar and some usults to draw app f some analytical swledge to most erroneous use o and presentation sition, of the subject ted ability to use data nd presentation si subject. Show littly to apply ability to apply apply actions.	cal and independent ations. Demonstrate priate and insightful ical thinking, some nfamiliar situations. repriate conclusions. abilities and logical familiar situations. If data and results to kills. at. Show evidence of y knowledge to solve and results to draw kills. er or no evidence of knowledge to solve of data and results to solve of data and results.		
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y A+ to F A B C D Fail	Demonstrate thorough grasp of the subject. Show evidence of strong analytic thinking, and ability to apply knowledge to a wide range of complex, familiar an highly proficient lab skills and techniques and critical use of data and results conclusions. Demonstrate highly effective organization and presentation skills. Demonstrate substantial grasp of the subject. Show evidence of analytical a evidence of independent thinking, and ability to apply knowledge to familia Demonstrate proficient lab skills and techniques and correct use of data and results of the subject of th	ical abilities, logicand unfamiliar situsts to draw appro abilities and logiliar and some usults to draw app f some analytical swledge to most erroneous use o and presentation sition, of the subject ted ability to use data nd presentation si subject. Show littly to apply ability to apply apply actions.	cal and independent ations. Demonstrate priate and insightful ical thinking, some infamiliar situations. repriate conclusions. abilities and logical familiar situations of data and results to exit is an expectation of the conclusions. at. Show evidence of y knowledge to solve and results to draw cills. are or no evidence of converted to solve of data and results resentation skills.		

	Tutorials		6
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		5
	Examination		65
	Laboratory reports		20
	Test		10
Required/recommended reading and online materials	Skoog, West, Holler and Crouch, "Fundament Learning.	tals of Analytical Chemistry", late:	st edition, Cengage
Additional Course Information	Laboratory classes are mandatory. Students mu pass this course.	ust complete ALL experiments and	laboratory reports to

CHEM2341 Inorganic cher	nistry I (6 c	redits)		Academic Year	2014	
Offering Department	Chemistry			Quota	120	
Course Co-ordinator	Prof V W	V Yam, Chemistry (wwyam@hku	ı.hk)			
Teachers Involved		W Yam / Dr. H Y Au Yeung, Che ′uen, Chemistry	mistry			
Course Objectives	relevance	To provide students with the basic principles and knowledge of inorganic chemistry and to introduce th relevance to biological processes and materials science. This course provides the foundation for furth studies in inorganic chemistry.				
Course Contents & Topics	electronic redox and	concept; structure and bonding absorption and magnetic propert substitution; chemistry of selec ince to biology and materials.	ies of metal complexes; cl	nemical reactions of	metal complexe	
Course Learning Outcomes	1. Unders selected e 2. Demon 3. Demon transition transition 4. Demon and the th	On successful completion of this course, students should be able to: 1. Understand the basic principles and concepts of inorganic chemistry and appreciate their relevance selected examples of biological processes and materials science. 2. Demonstrate knowledge and understanding of the acid-base concept and definition. 3. Demonstrate knowledge and understanding of the structure and bonding of main group compounds a transition metal complexes and their relevance to the electronic absorption and magnetic properties transition metal complexes. 4. Demonstrate knowledge and understanding of the thermodynamic stability of metal complex formatiand the thermodynamic and kinetic aspects of substitution and redox reactions. 5. Demonstrate knowledge and understanding of the role of main group elements and transition me				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM1042 General chemistry; and Not for students who have passed in CHEM2041 Principles of chemistry or have already enrolled in the course.					
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	В	Demonstrate thorough knowledge and understanding of essential facts, concepts, principles, and theories relating the basic foundation knowledge of inorganic chemistry, especially those related to acid-base concept; structure at bonding of main group compounds and metal complexes; electronic absorption spectroscopy, magnetic propertia as well as thermodynamic and kinetic aspects of metal complexes and their reactions; and their relevance biological processes and materials science. Show strong ability to apply and integrate knowledge and theory relatit to the basic foundation knowledge of inorganic chemistry. Show strong ability to analyze novel problems and critic use of data and experimental results to draw appropriate and insightful conclusions relating to the basic principle and knowledge of inorganic chemistry. Demonstrate highly effective basic laboratory skills and techniques, especia in the synthesis and characterization of inorganic compounds and metal complexes. Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles, are theories relating to the basic foundation knowledge of inorganic chemistry, especially those related to acid-base concept; structure and bonding of main group compounds and metal complexes; electronic absorption spectroscop magnetic properties as well as thermodynamic and kinetic aspects of metal complexes and their reactions; and the relevance to biological processes and materials science. Show evidence to apply and integrate knowledge and theory relating to the basic foundation knowledge of inorganic chemistry. Show evidence to analyze novel probler and correct use of data and experimental results to draw appropriate conclusions relating to the basic principles and			oncept; structure an magnetic propertie d their relevance te eand theory relatin problems and critica the basic principle echniques, especiall epts, principles, and related to acid-basic properties, and the reactions; and the rate knowledge and alyze novel problem.	
	knowledge of inorganic chemistry. Demonstrate effective basic laboratory skills and techniques, especially in the synthesis and characterization of inorganic compounds and metal complexes. C Demonstrate general but incomplete command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the basic foundation knowledge of inorganic chemistry, especially those related to acid-base concept; structure and bonding of main group compounds and metal complexes; electronic absorption spectroscopy, magnetic properties as well as thermodynamic and kinetic aspects of metal complexes and their reactions; and their relevance to biological processes and materials science. Show evidence of some abilities to apply and integrate knowledge and theory relating to the basic foundation knowledge of inorganic chemistry. Show ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to the basic principles and knowledge of inorganic chemistry. Demonstrate moderately effective basic laboratory skills and techniques, especially in the synthesis and characterization of inorganic compounds and metal complexes.					
	D	Demonstrate partial but limited comm and theories relating to the basic foun concept; structure and bonding of mai magnetic properties as well as thermo	dation knowledge of inorganic cl n group compounds and metal c	hemistry, especially those omplexes; electronic abso	related to acid-bas orption spectroscopy	

	Fail	relevance to biological processes and m knowledge and theory relating to the ba analyze problems to most familiar situation to draw appropriate conclusions relating partially effective basic laboratory skills an compounds and metal complexes. Demonstrate little or no evidence of comprinciples, and theories relating to the bas acid-base concept; structure and bondin spectroscopy, magnetic properties as w reactions; and their relevance to biologica apply and integrate knowledge and theor little or no ability to analyze problems to respect to the proposition of the proposition of the problems to relating the proposition of the proposi	sic foundation knowledge of inorms and mostly correct but erronec to the basic principles and knowled techniques, especially in the symmand of knowledge and under ic foundation knowledge of inorgate of main group compounds and all as thermodynamic and kinetic all processes and materials science y relating to the basic foundation nost familiar situations and erronecent	ganic chemistry. Show limited ability to use of data and experimental results use of otata and experimental results use of inorganic chemistry. Demonstrate in thesis and characterization of inorganic virstanding of essential facts, concepts, nic chemistry, especially those related to metal complexes; electronic absorption aspects of metal complexes and their and in the complexes and their and in the complexes in the complexes of metal complexes and their and in the complexes and the complexes are complexed to the complexes and the complexes and the complexes are complexed to the complexes are complexed to the complexes and the complexes are complexed to the co	
		to draw appropriate conclusions relating to the basic principles and knowledge of inorganic chemistry. I minimally effective basic laboratory skills and techniques, especially in the synthesis and charact inorganic compounds and metal complexes.			
Course Type	Lecture w	rith laboratory component course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laboratory			24	
	Tutorials			6	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods	5	Details	Weighting in final course grade (%)	
	Assignm	ents		5	
	Examination			65	
	Laboratory reports			10	
	Test			20	
Required/recommended reading and online materials	P. Atkins	on ; G. Wilkinson ; P. L. Gaus : Basic, T. Overton, J. Rourke, M. Weller Iniversity Press, 2006, 4th ed.)	c Inorganic Chemistry (John and F. Armstrong: Shrive	Wiley & Sons, 1995, 3rd ed.) er & Atkins Inorganic Chemistry	
Additional Course Information	Laborator pass this	y classes are mandatory. Students course.	must complete ALL exper	iments and laboratory reports to	

CHEM2441 Organic chem	istry I (6 cre	redits)						Academic Year	2014	
Offering Department	Chemistry	у					C	Quota	130	
Course Co-ordinator	Prof P Chi	hiu, Cher	mistry (pchiu	(@hku.hk						
Teachers Involved	Prof P Chi	hiu, Cher	mistry							
Course Objectives	alcohols, chemical	To introduce the physical and chemical properties of alkanes, alkenes, alkynes, alkyl halides, diene alcohols, ethers, epoxides and organometallics, and apply this knowledge to understand and solv chemical problems. This course is the pre-requisite for continuing studies in organic chemistre (CHEM3441 Organic Chemistry II).					and solve			
Course Contents & Topics	Alkanes: r Cycloalkar Chirality ar Alkenes: s Alkynes: s Alkyl halid Dienes: sy Alcohols, E	represe anes: co and isom stereois synthes des: Me synthesis , Ethers a	s and function antations, coronformations nerism somerism, sy is and reaction chanisms of s, properties and Epoxide synthesis a	nformation and isome enthesis are ions substitution and react s: reaction	analysis erism nd reactions ons and elir ions					
Course Learning Outcomes	1. Visualiz molecules. 2. Recogn 3. Unders alkenes, a 4. Apply re	lize and es. prize, classification than alkynes, reactions	ssify, and na ne mechanis dienes, alco s to the synth	raw three- ame chiral ams, cond bhols, ethe nesis of tar	dimensiona stereoisom itions and rs, epoxide get molecu	ers and diasoutcomes and organiles.	emically stereome of the re nometallic	actions of alkan		Ū
Pre-requisites (and Co-requisites and Impermissible combination)	Not for stu	tudents	42 General owho have payor or have alre	assed in C	HEM2041	Principles o	of chemis	try or CHEM244	2 Funda	amental c
Offer in 2014 - 2015	Y 1st	t sem 2	2nd sem				E	xamination	Dec	May
Offer in 2015 - 2016	Υ									
Course Grade	A+ to F									
Grade Descriptors	A	pertair integra	ning to the che ate knowledge	emical prope and theory,	rties, reaction and a stron	s and mechar g ability to an	nisms of or alyze and	and understanding o ganic chemistry. Sho solve novel organic n of lab skills and t	w a stroi	ng ability to problems.

		chemistry experiments.				
	В	B Demonstrate substantial command of knowledge and understanding of essential facts and concepts pertaining to the chemical properties, reactions and mechanisms of organic chemistry. Show evidence of ability to integrate knowledge and theory, and evidence of ability to analyze and solve novel organic chemistry problems. Demonstrate effective organization, understanding, and execution of lab skills and techniques in organic chemistry experiments.				
	С	Demonstrate a general but incomplete command of knowledge and understanding of essential facts and concepts pertaining to the chemical properties, reactions and mechanisms of organic chemistry. Show evidence of some ability to integrate knowledge and theory, and evidence of some ability to analyze novel problems. Show a mostly correct use of knowledge to solve most familiar problems. Demonstrate adequately effective organization, understanding, and execution of lab skills and techniques in organic chemistry experiments.				
	D	Demonstrate a partial but limited command of knowledge and understanding of essential facts and concepts pertaining to the chemical properties, reactions and mechanisms of organic chemistry. Show evidence of limited ability to integrate knowledge and theory, and a limited ability to analyze novel problems. Show some correct but also erroneous use of knowledge to solve most familiar problems. Demonstrate a partially effective organization, understanding and application of lab skills and techniques in organic chemistry experiments.				
	Fail	Demonstrate little or no evidence of command of knowledge and understanding of essential facts and concepts pertaining to the chemical properties, reactions and mechanisms of organic chemistry. Show little or no evidence of ability to apply and integrate knowledge and theory, and little or no ability to analyze novel problems. Show little or no evidence of ability to solve most familiar problems. Demonstrate minimal or no organization, understanding and application of lab skills and techniques in organic chemistry experiments.				
Course Type	Lecture w	ith laboratory component course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laboratory			24		
	Tutorials			6		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignm	ents		5		
	Examina	tion		65		
	Laborato	ry reports	Experiment & Lab report	20		
	Test		Test/Quiz	10		
Required/recommended reading and online materials	Paula Y. I	Paula Y. Bruice, "Organic Chemistry", 2011, 6th Edition, Pearson. Paula Y. Bruice, "Study Guide and Solutions Manual for Organic Chemistry" 6th Edition, Prentice Hall. J. W. Lehman, "Operational Organic Chemistry", 2009, 4th Edition, Prentice Hall.				
Additional Course Information	Laborator pass this	y classes are mandatory. Students r course.	must complete ALL experiments a	and laboratory reports to		

CHEM2442 Fundamentals	of organic	chemistry (6 credits)		Academic Year	2014	
Offering Department	Chemistry			Quota	120	
Course Co-ordinator	Dr P H To	, Chemistry (phtoy@hku.hk)				
Teachers Involved	Dr P H To	, Chemistry				
Course Objectives	especially organic fu	The major objective of this course is to give the students a basic understanding of organic chemist especially in the context of daily life. This will be achieved through the introduction of the chemistry organic functional groups that form the basis of organic molecules. The concepts presented in the lectu will be reinforced by a series of laboratory experiments.				
Course Contents & Topics	ketones, o	The chemistry of organic functional groups such as alkenes, alkynes, alkyl halides, alcohols, aldehyd ketones, carboxylic acids and their derivatives, and amines will be discussed, as will the general conce of molecular structure, conformation and stereochemistry.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate basic understanding of the structure of organic molecules. 2. Demonstrate basic understanding of the reactivity of organic molecules. 3. Appreciate how organic chemistry plays an important role in everyday life.					
Pre-requisites and Co-requisites and mpermissible combination)		IEM1042 General chemistry; and dents who have passed CHEM244	1 Organic chemistry I or	have already enrol	led in this course	
impermissible combination)	Y 1st sem Examination Dec					
. ,	Y 1st	sem		Examination	Dec	
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2014 - 2015 Offer in 2015 - 2016		sem		Examination	Dec	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y	Demonstrate thorough mastery at an ac for attaining all the course learning outc evidence of original thought, and ability problems.	omes. Show strong analytical	anic chemistry knowledg	je, and skills required	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F	Demonstrate thorough mastery at an ac for attaining all the course learning outc evidence of original thought, and ability	omes. Show strong analytical to apply knowledge to a widerganic chemistry with a broad ning outcomes. Show evidence	anic chemistry knowledg and critical abilities and de range of complex, fa I range of knowledge, a se of analytical and critic	je, and skills required I logical thinking, with imiliar and unfamiliar	

	D	s required for attaining some of , but with limited analytical and				
	Fail	Demonstrate little or no evidence of command of organic chemistry knowledge, and skills required for attaining th course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or nability to apply knowledge to solve problems.				
Course Type	Lecture wi	cture with laboratory component course				
Course Teaching & Learning Activities	Activities	3	Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laboratory			20		
	Tutorials			5		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Examination			60		
	Laborator	y reports	Experiment & Lab report	15		
	Test		Test/Quiz	25		
Required/recommended reading and online materials	Bruice, P.	Bruice, P.Y. Essential Organic Chemistry (Pearson, 2010, 2nd edition)				
Additional Course Information	Laboratory	tudents who are planning to CHEM3441 should take CHEM2441. aboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to ass this course.				

CHEM2443 Fundamentals credits)	of organic	chemistry for pharmacy studen	ts (6	Academic Year	2014	
Offering Department	Chemistry	/		Quota	60	
Course Co-ordinator	Dr P H To	oy, Chemistry (phtoy@hku.hk)		'	'	
Teachers Involved	Dr P H To	by, Chemistry				
Course Objectives	chemistry chemistry	The major objective of this course is to give pharmacy students a basic understanding of organic chemistry, especially in the context of daily life. This will be achieved through the introduction of the chemistry of organic functional groups that form the basis of organic molecules. The concepts presented in the lectures will be reinforced by a series of laboratory experiments.				
Course Contents & Topics	ketones,	The chemistry of organic functional groups such as alkenes, alkynes, alkyl halides, alcohols, aldehydes ketones, carboxylic acids and their derivatives, and amines will discussed, as will the general concepts of molecular structure, conformation and stereochemistry.				
Course Learning Outcomes	1. Demon 2. Demon	On successful completion of this course, students should be able to: 1. Demonstrate basic understanding of structure of organic molecules. 2. Demonstrate basic understanding of the reactivity of organic molecules. 3. Appreciate how organic chemistry plays an important role in everyday life.				
Pre-requisites (and Co-requisites and Impermissible combination)	Not for st	Pass in CHEM1042 General chemistry; and Not for students who have passed CHEM2442 Fundamentals of organic chemistry, or already enrolled this course. (This course is for BPharm students only)				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive organic chemistry knowledge, and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar problems.					
	B Demonstrate substantial command of organic chemistry with a broad range of knowledge, and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar problems.					
	C Demonstrate general but incomplete command of organic chemistry knowledge, and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar problems.					
	D Demonstrate partial but limited command of organic chemistry knowledge, and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems.					
	Fail Demonstrate little or no evidence of command of organic chemistry knowledge, and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems.					
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hour	
& Learning Activities	Lectures				24	

	Laboratory		20
	Tutorials		5
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		60
	Laboratory reports	Experiment & Lab report	15
	Test	Test/Quiz	25
Required/recommended reading and online materials	Bruice, P.Y.: Essential Organic Chem	istry (Pearson, 2010, 2nd edition)	
Additional Course Information	Laboratory classes are mandatory. Spass this course.	Students must complete ALL experiments	and laboratory reports to

CHEM2541 Physical chemi	stry i (6 credits)	Academic Year	2014			
Offering Department	Chemistry	Quota	100			
Course Co-ordinator	Dr J Y Tang, Chemistry (jinyao @hku.hk)					
Teachers Involved	Dr J Y Tang, Chemistry					
Course Objectives	The course aims to provide a rigorous understanding of equilibrium thermodynamics and chemical kinetics. Topics include the three laws of thermodynamics, thermodynamic properties of mixtures, solutions, chemical equilibrium, rates of chemical reactions and reaction dynamics. This course also provides training of laboratory skills and techniques: characterization of thermodynamic properties and chemical kinetics of selected chemical reactions using instrumental methods and computations. Students will gain a good foundation of knowledge and skills for further study in Physical Chemistry.					
Course Contents & Topics	Properties of Gases States of gases and the gas laws with applications. The First Law of Thermodynamics Basic concepts of work, heat, energy, expansion work, heat transactions,					
	enthalpy and adiabatic changes and examples in relation to biochemistry and materials science. The Second and Third Laws of Thermodynamics Direction of spontaneous change, entropy and the Third Law of Thermodynamics.					
	Simple Mixtures Thermodynamic description of mixtures, partial molar quantities, and chemical potentials of liquids and examples of osmosis in physiology and biochemistry. Activities of solvent, solute, regular solutions and ions in solution.					
	Chemical Equilibrium Spontaneous chemical reactions, the Gibbs energy minimum and equilibrium and example of energy conversion in biological cells. Response of equilibria to pressure, temperature.					
	Molecules in Motion Molecular motion in gases and liquids, kinetic model, collisic surfaces, the rate of effusion and transport properties, conducted electrolyte solutions and ion channels in biology.					
	Rates of Chemical Reactions Empirical chemical kinetics including experimental methods, integrated rate laws and temperature dependence of reactio discussion of plant photosynthesis and solar energy devices.					
	Reaction Dynamics Reactive collision theory, Transition state theory and Eyring equation. Dynamics of reactive collisions on potential energy surfaces.					
Course Learning Outcomes	On successful completion of this course, students should be able to:					
	Demonstrate knowledge and understanding of the proprates of chemical reactions. Understand and demonstrate knowledge of the three laws. Understand and apply the concepts of chemical equilibrit temperature and pressure. Demonstrate knowledge and understanding of basic reaction and reactive collisions on a potential energy surface.	s of thermodynamics. um and the response of che	mical equilibria t			
Pre-requisites and Co-requisites and mpermissible combination)	Pass in CHEM1042 General chemistry; and Not for students who passed in CHEM2041 Principles of che	emistry or have already enrol	ed in this course			

Offer in 2014 - 2015	Y 1st	Y 1st sem 2nd sem Examination Dec Ma					
Offer in 2015 - 2016	Υ	Υ					
Course Grade	A+ to F						
Grade Descriptors	Α	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show thorough grasp of the subject. Demonstrate strong analytical and critical abilities and logical thinking, with ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Show highly effective lab skills and techniques. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show substantial grasp of the subject. Demonstrate evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Show effective lab skills and techniques. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show general but incomplete grasp of the subject. Demonstrate evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Show moderately effective lab skills and techniques. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show partial but limited grasp, with retention of some relevant information, of the subject. Demonstrate evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Demonstrate partially effective lab skills and techniques. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Show evidence of little or no grasp of the knowledge and understanding of the subject. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Demonstrate minimally effective or ineffective lab skills and techniques. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-b	ased course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods	S	Details		Veighting in final course grade (%)		
	Assignments		including tests		30		
	Examination				70		
Required/recommended reading and online materials	"Physical	Chemistry" by P. W. Atkins, lat	est edition				

CHEM3141 Environmental	chemistr	y (6 credits)	Academic Year	2014		
Offering Department	Chemistr	ry	Quota	100		
Course Co-ordinator	Dr W T C	Chan, Chemistry (wtchan@hku.hk)				
Teachers Involved		Dr W T Chan, Chemistry Prof A S C Cheung, Chemistry				
Course Objectives		rse introduces students to Environmental Chemistry an s involved in various environmental phenomena and pro		stand the chemica		
Course Contents & Topics	troposph Water Cl base che Organic I Energy: (cells)	Waste treatment: domestic and hazardous waste treatment (landfill, incineration, air stripping, adsorption,				
Course Learning Outcomes	1. Demoi 2. Descri energy p 3. Critica	essful completion of this course, students should be able instrate knowledge on chemical principles of the various fibe the practical processes of chemistry in atmospher production. Illy discuss local and global environmental issues based knowledge to analyze chemical processes involved in v	s environmental phenom e, water purification, wa d on scientific principles	ste treatment, and and data.		
Pre-requisites (and Co-requisites and Impermissible combination)		CHEM2041 Principles of chemistry or CHEM2341 Inc y I or CHEM2442 Fundamentals of organic chemistry o				
Offer in 2014 - 2015	Y 2n	nd sem	Examination	May		
Offer in 2015 - 2016	Υ			'		
Course Grade	A+ to F					
Grade Descriptors	 Demonstrate thorough grasp of the subject Demonstrate integration of the full range of appropriat principles, and evidence Show evidence of strong analytical abilities, logical and independent thinking, to apply knowledge to a wide range of complex, familiar and unfamiliar situations Demonstrate high organization and presentation skills. 					

	В	B - Demonstrate substantial grasp of the subject Demonstrate general integration of theories, principles, evidence Show evidence of analytical abilities and logical thinking, some evidence of independent thinking, ability to apply knowledge to familiar and some unfamiliar situations Demonstrate effective organization presentation skills.				
	С	- Demonstrate general but incomplete grasp of the subject Demonstrate some partial integration of theories, principles, and evidence Show evidence of some analytical abilities and logical thinking, little evidence of independent thinking, and ability to apply knowledge to most familiar situations Demonstrate moderately effective organization and presentation skills.				
	D	 Demonstrate partial but limited grasp, with retention of some relevant information, of the subject Demonstrate limited integration of theories, principles, and evidence Show evidence of limited analytical abilities, little or no evidence of independent thinking, and limited ability to apply knowledge to solve problems Demonstrate limited or barely effective organization and presentation skills. 				
	Fail	- Demonstrate little or no grasp of the knowledge and understanding of the subject Demonstrate little or inapt integration of theories, principles, and evidence Show little or no evidence of analytical abilities, logical and independent thinking, and very little or no ability to apply knowledge to solve problems Demonstrate incoherent organization and poor presentation skills.				
Course Type	Lecture-b	pased course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments		(continuous assessment)	25		
	Examination			75		
Required/recommended reading and online materials	C. Baird and M. Cann: Environmental Chemistry, Freeman, latest edition. S.E. Manahan: Environmental Chemistry, Lewis Publishers, latest edition.					

CHEM3142 Chemical proc		ioo ana analyoio (o oroano)					
Offering Department	Chemistry		Quota	20			
Course Co-ordinator	Prof G K \	Prof G K Y Chan, Chemistry (hrsccky@hku.hk)					
Teachers Involved		Chan, Chemistry urer, Chemistry					
Course Objectives		ize with typical chemical industries important in of chemicals manufacturing and chemical products		To understand the			
Course Contents & Topics	chemical	ow charts, units and conversions, materials an processes to include variation in products, scal industrial gases, beverage processes, chloroal	e, and types of operation, e.g.				
Course Learning Outcomes	1. Solve b 2. Be fami	On successful completion of this course, students should be able to: 1. Solve basic problems of energy and mass balances in chemical and environmental processes. 2. Be familiarized with a few common chemical industries and chemical processes. 3. Understand some general principles of industrial practice through plant visits.					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in CHEM2041 Principles of chemistry or CHEM2341 Inorganic chemistry I or CHEM2441 Organic chemistry I or CHEM2541 Physical chemistry I					
Offer in 2014 - 2015	Y 2nd	sem	Examination	May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate thorough knowledge of industrial chemical processes and mastery of mass and energy balance skills required for attaining all of the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to solve problems in a wide range of complex, familiar and unfamiliar situations. Critical use of data and sourcing of references. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial knowledge of industrial chemical processes and command of mass and energy balance skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to solve problems in familiar and some unfamiliar situations. Correct use of data and sourcing of references. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete knowledge of industrial chemical processes and command of mass and energy balance skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge solve problems to most familiar situations. Mostly correct but some erroneous use of data and references. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited knowledge of industrial chemical processes and command of mass and energy balance skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Limited ability to use data and source references. Apply limited or barely effective organizational and presentational skills.					
	Fail	•					

Course Type	Lecture with laboratory component course				
Course Teaching & Learning Activities	Activities	Details	No. of Hours		
	Lectures		24		
	Laboratory	computational laboratory	12		
	Field work	1 - 2 plant visits	12		
	Reading / Self study		100		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments	continuous assessment	30		
	Examination		70		
Required/recommended reading and online materials	Felder and Rousseau: Elementary	Principles of Chemical Processes			

CHEM3143 Introduction to	, materiale	onemeny (e ereane)		Academic Year	2014	
Offering Department	Chemistry Quota 100			100		
Course Co-ordinator	Prof W K Chan, Chemistry (waichan@hku.hk)					
Teachers Involved	Prof W K	Chan, Chemistry				
Course Objectives		rse provides an introduction to ma es will also be introduced. This cour- course.				
Course Contents & Topics	polymer	Classification of materials; introduction to organic polymers: molecular weight, polymerization reaction, polymer synthesis and characterization; ceramics; semiconducting materials; applications of different materials; materials characterizations.				
Course Learning Outcomes	On succe	ssful completion of this course, studen	ts should be able to:			
	2. Unders the kinetic 3. Identify polymers 4. Demon	 Describe different materials classification and to explain the concept of structure/property relationship. Understand the concept of molecular weight distribution in polymers, and explain how it is affected by the kinetics of polymerization reactions. Identify examples of some important polymers, and explain how the molecular structure of these polymers affect their physical properties. Demonstrate knowledge in materials characterizations. 				
Pre-requisites (and Co-requisites and Impermissible combination)		CHEM 2341 Inorganic chemistry I or I or CHEM2041 Principles of chemistr				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough knowledge and understanding of essential facts, concepts, principles, and theories relating to the classification of materials, materials properties, synthesis and characterization of polymers, properties and applications of common polymers. Show strong ability to apply and integrate knowledge and theory relating to the synthesis and applications of materials. Show strong ability to analyze novel problems and critical use of data and experimental results to draw appropriate and insightful conclusions relating to materials synthesis and characterization. B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles, and					
	theories relating to the classification of materials, materials properties, synthesis and characterization of polymers, properties and applications of common polymers. Show evidence to apply and integrate knowledge and theory relating to the synthesis and applications of materials. Show evidence to analyze novel problems and correct use of data and experimental results to draw appropriate conclusions relating to materials synthesis and characterization.					
	Demonstrate general but incomplete command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the classification of materials, materials properties, synthesis and characterization of polymers, properties and applications of common polymers. Show evidence of some abilities to apply and integrate knowledge and theory relating to the synthesis and applications of materials. Show ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to materials synthesis and characterization.					
	Demonstrate partial but limited command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the classification of materials, materials properties, synthesis and characterization of polymers, properties and applications of common polymers. Show evidence of limited abilities to apply and integrate knowledge and theory relating to the synthesis and applications of materials. Show limited ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to materials synthesis and characterization.					
	Fail Demonstrate little or no evidence of command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the classification of materials, materials properties, synthesis and characterization of polymers, properties and applications of common polymers. Show little or no evidence of abilities to apply and integrate knowledge and theory relating to the synthesis and applications of materials. Show little or no ability to analyze problems to most familiar situations and erroneous use of data and experimental results to draw appropriate conclusions relating to materials synthesis and characterization.					
Course Type	Lecture-based course					
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures				36	

	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments	(continuous assessment)	30
	Examination		70
Required/recommended reading and online materials	F. W. Billmeyer: Textbook of Polymer Sci G. Odian: Principles of Polymerizations (M. P. Stevens: Polymer Chemistry: An In	John Wiley and Sons, 2004)	3)

CHEM3146 Principles and a techniques (6 credits)	pplication	ns of spectroscopic and analytical	I	Academic Year	2014	
Offering Department	Chemistry			Quota	110	
Course Co-ordinator	Dr X Li, Chemistry (xiangli @hku.hk)					
Teachers Involved	Dr X Li, Chemistry					
Course Objectives	To cover the principles and applications of modern practical spectroscopic and analytical techniques. This course is a pre-requisite for the advanced chemistry courses.					
Course Contents & Topics		Absorption Spectroscopy, Nuclear Mag pectroscopy, Elemental Analysis, Molecu			ass Spectrometry,	
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the basic principles and applications of IR, UV/Vis, MS and NMR spectroscopic techniques. 2. Describe and explain the terminology of IR, UV/Vis, MS and NMR spectroscopies. 3. Perform chemical structure elucidation and analysis based on UV/Vis, MS and NMR spectroscopic data.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in an	y CHEM2XXX level course				
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ				'	
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems.					
Course Type	Lecture-ba	sed course				
Course Teaching	Activities	; D	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods)etails		Weighting in final course grade (%)	
	Assignments				15	
	Examination				70	
	Test (2 quizzes)			15		
Required/recommended reading and online materials	Donald L. Pavia, Gary M. Lampman, George S. Kriz: Introduction to Spectroscopy (Thomson Learning, 2001, 3rd & 4th edition) W. Kemp: Organic Spectroscopy (Macmillan, 1991, 3rd ed.)					
Additional Course Information	Suggested follow-up course: CHEM3241					

CHEM3241 Analytical chem	Academic Year	2014			
Offering Department	Chemistry	Quota	80		
Course Co-ordinator	Dr W T Chan, Chemistry (wtchan@hku.hk)				

Teachers Involved	Dr W T Chan, Chemistry Dr I K Chu, Chemistry				
Course Objectives	To cover the basic principles and applications of chemical instrumentation. This course aims to provide working knowledge, in addition to the principles, of instruments that are commonly used in chemical laboratories.				
Course Contents & Topics	Optical methods: Beer's Law; UV-visible, infrared, and atomic spectrometry; fluorescence; atomic mass spectrometry; grating spectrometer; photon detectors and thermal detectors. Separation methods: partition; chromatography theories; high performance liquid chromatography (HPLC) and gas chromatography (GC); instrumental set up of HPLC and GC. Mass spectrometry: fundamental concept of mass spectrometry; electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI); time-of-flight (TOF) and quadrupole (Q) mass analyzers.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the principles of the optical methods, separation methods, and mass spectrometry. 2. Describe the basic experimental set up and the properties of the basic components of the instruments used in the laboratory classes. 3. Apply experimental skills in chemical analysis including sample preparation, standard solution preparation, instrument calibration, and matrix effects correction (standard additions).				
Pre-requisites (and Co-requisites and Impermissible combination)		HEM2041 Principles of chemistry or Cations of spectroscopic techniques	CHEM2241 Anlytical chemistry I or C	HEM3146 Principles	
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec	
Offer in 2015 - 2016	Υ		I	1	
Course Grade	A+ to F				
Grade Descriptors	A - Demonstrate thorough grasp of the subject Show evidence of strong analytical abilities, logical and independent thinking, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations Demonstrate highly proficient lab skills and techniques and critical use of data and results to draw appropriate and insightful conclusions Demonstrate highly effective organization and presentation skills				
	В	 - Demonstrate substantial grasp of the subject Show evidence of analytical abilities and logical thinking, some evidence of independent thinking, and ability to apply knowledge to familiar and some unfamiliar situations Demonstrate proficient lab skills and techniques and correct use of data and results to draw appropriate conclusions Demonstrate effective organization and presentation skills. 			
	С	- Demonstrate general but incomplete grasp of the subject Show evidence of some analytical abilities and logical thinking, little evidence of independent thinking, and ability to apply knowledge to most familiar situations Demonstrate adequate lab skills and techniques and mostly correct but some erroneous use of data and results to draw appropriate conclusions Demonstrate moderately effective organization and presentation skills.			
	D	- Demonstrate partial but limited grasp, with retention of some relevant information, of the subject Show evidence of limited analytical abilities, little or no evidence of independent thinking, and limited ability to apply knowledge to solve problems Demonstrate partially effective lab skills and techniques and limited ability to use data and results to draw appropriate conclusions Demonstrate limited or barely effective organization and presentation skills.			
	Fail	 Demonstrate little or no grasp of the knowledge and understanding of the subject Show little or no evidence of analytical abilities, logical and independent thinking, and very little or no ability to apply knowledge to solve problems Demonstrate minimally effective or ineffective lab skills and techniques and misuse of data and results and/or unable to draw appropriate conclusions Demonstrate incoherent organization and poor presentation skills. 			
Course Type	Lecture wit	th laboratory component course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laboratory			28	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments		including lab & test	30	
	Examination			70	
Required/recommended reading and online materials	D.A. Skoog, F.K. Holler, S.R. Crouch: Principles of Instrumental Analysis (Thomson, latest edition). D.A. Skoog, D.M. West, F.J. Holler, and S.R. Crouch: Fundamentals of Analytical Chemistry (Thomson, latest edition)				
Additional Course Information	Laboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to pass this course.				

CHEM3242 Food and water analysis (6 credits)		Academic Year	2014		
Offering Department	Chemistry Quota 50				
Course Co-ordinator	Dr K M Ng, Chemistry (kwanmng@hku.hk)	Dr K M Ng, Chemistry (kwanmng@hku.hk)			
Teachers Involved	Dr I K Chu, Chemistry Dr K M Ng, Chemistry				
Course Objectives	To cover areas in the application and new methodology development in analytical chemistry with focus on food and water analysis.				
Course Contents & Topics	Chemical Analysis in Practicing Laboratories: Use of standard methods, guidelines and standards for food and water analysis; good laboratory practice; reliability and quality issues in chemical analysis.				
	202				

	Food Analysis: Requirement of nutritional labeling; determination of food nutritional value (e.g. total protein content, sodium content); detection of food adulteration and contamination (e.g. presence of banned additives, toxins, undeclared components); recent issues and case studies in food analysis.				
	technologie		npling, pretreatment, storage of wate ed analysis of selected types of wat		
	digestion,	solid phase extraction) and instrur	application and combination of ar mental (e.g. GC, LC, MS) technique ysis, analysis of certified reference m	es for food and water	
Course Learning Outcomes	On succes	sful completion of this course, stude	nts should be able to:	,	
	1. Identify and determine errors and uncertainty of analytical results. 2. Apply measures taken to control quality and ensure reliability of analytical results. 3. Demonstrate a general knowledge in food and water analysis. 4. Understand issues in public health protection related to chemical analysis. 5. Carry out analytical techniques used in practicing food and water laboratories.				
Pre-requisites (and Co-requisites and Impermissible combination)	chemistry I	l or CHEM2541 Physical chemistry I	CHEM2341 Inorganic chemistry I of or CHEM2041 Principles of chemistremical instrumentation, or already enr	y; and	
Offer in 2014 - 2015	Y 2nd	sem	Examination	n May	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate through a thorough grasp of the knowledge and skills required in theory and laboratory work in food and water analysis to acquire accurate results with full interpretation for analytical application as described in all the course learning outcomes. Show strong analytical and critical abilities, logical thinking and capability to apply knowledge learnit to solve a wide range of complex issues and problems related to the analysis of food and water. Apply highly effective organization and presentation skills as shown in class work.				
	B Demonstrate a substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities, logical thinking, and capability to apply knowledge learnt to solve a wide range of complex issues and problems related to the analysis of food and water. Apply effective organization and presentation skills as shown in class work.				
	C Demonstrate a general command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, logical thinking, and ability to apply knowledge learnt to solve a wide range of complex issues and problems related to the analysis of food and water. Apply effective organization and presentation skills as shown in class work.				
	Demonstrate a partial but limited command of knowledge and skills required for attaining some of the course learning outcomes in Food and Water Analysis. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems related to the analysis of food and water. Apply limited or barely effective organization and presentation skill as shown in class work.				
	Fail	outcomes. Lack of analytical and critical a	ommand of knowledge and skills required for a bilities, logical and coherent thinking. Show vethe analysis of food and water. Organization in class work.	ery little or no ability to apply	
Course Type	Lecture wit	th laboratory component course			
Course Teaching	Activities	;	Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laborator	у		24	
	Tutorials			8	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments			5	
	Examination			70	
	Laboratory reports		coursework assessment including laboratory work	15	
	Test			10	
Required/recommended reading and online materials		og, D. M. West, F. J. Holler, S.R. atest edition)	Crouch: Fundamentals of Analytica	l Chemistry (Cengage	
Additional Course Information		classes are mandatory. Students	hed material will be made throughout must complete ALL experiments an		

CHEM3243 Introductor	Academic Year	2014		
Offering Department	Chemistry Quota			
Course Co-ordinator	Dr X Li, Chemistry (xiangli@hku.hk)			
Teachers Involved	Dr X Li, Chemistry Dr K C J Wong, Chemistry			

Course Objectives	This course is designed for non-chemistry major students covering basic principles of separation and spectroscopy for chemical analysis. This course provides a general foundation for further studies in pharmacology, life and environmental sciences.				
Course Contents & Topics	Optical methods: Beer's Law; UV-visible, infrared, and atomic spectrometry; fluorescence; atomic mass spectrometry; grating spectrometer; photon detectors and thermal detectors. Separation methods: partition; chromatography theories; high performance liquid chromatography (HPLC) and gas chromatography (GC); instrumental set up of HPLC and GC. Mass spectrometry: fundamental concept of mass spectrometry; electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI); time-of-flight (TOF) and quadrupole (Q) mass analyzers. NMR: basic principle of nuclear magnetic resonance. Analysis and quality assurance: statistical analysis of small sets of data, control chart.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the principles of the optical methods, separation methods, mass spectrometry, and NMR. 2. Describe the basic experimental set up and the properties of the basic components of the instruments used in the laboratory classes.				, ,
Pre-requisites (and Co-requisites and Impermissible combination)	Not for stu	IEM2041 Principles of chemistry or C dents who have passed CHEM324 ² rolled in this course.			umentation or have
Offer in 2014 - 2015	Y 2nd	sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	 - Demonstrate thorough grasp of the subject Show evidence of strong analytical abilities, logical and independent thinking, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations Demonstrate highly proficient lab skills and techniques and critical use of data and results to draw appropriate and insightful conclusions Demonstrate highly effective organization and presentation skills. 				
	 Demonstrate substantial grasp of the subject Show evidence of analytical abilities and logical thinking, some evidence of independent thinking, and ability to apply knowledge to familiar and some unfamiliar situations Demonstrate proficient lab skills and techniques and correct use of data and results to draw appropriate conclusions Demonstrate effective organization and presentation skills. 				
	С	 Demonstrate general but incomplete grasp of the subject. Show evidence of some analytical abilities and logical thinking, little evidence of independent thinking, and ability to apply knowledge to most familiar situations. Demonstrate adequate lab skills and techniques and mostly correct but some erroneous use of data and results to draw appropriate conclusions. Demonstrate moderately effective organization and presentation skills. 			
	D	- Demonstrate partial but limited grasp, witl of limited analytical abilities, little or no evi solve problems Demonstrate partially effe to draw appropriate conclusions Demonst	dence of independent think ective lab skills and techniq	ing, and limited ability ues and limited ability	to apply knowledge to to use data and results
	Fail				
Course Type	Lecture wit	h laboratory component course			
Course Teaching & Learning Activities	Activities		Details		No. of Hours
& Learning Activities	Lectures				24
	Laborator	y			28
	Reading /	Self study			100
Assessment Methods	Methods Details Weightin			Weighting in final course grade (%)	
and Weighting					
and Weighting	Assignme	nts	(continuous asses	sment)	30
and Weighting	Assignme Examinati		(continuous asses	sment)	30 70
Required/recommended reading and online materials	Examinati D.A. Skoog	on g, F.K. Holler, S.R. Crouch: Principle: g, D.M. West, F.J. Holler, and S.R.	s of Instrumental Analy	vsis (Thomson, lat	70 est edition).

CHEM3244 Analytical tecl	nniques for pharmacy students (6 credits)	Academic Year	2014		
Offering Department	Chemistry	Quota	30		
Course Co-ordinator	Dr X Li, Chemistry (xiangli@hku.hk)	·			
Teachers Involved	Dr X Li, Chemistry Dr K C J Wong, Chemistry				
Course Objectives	This course is designed for Bachelor of Pharmacy students to provide an overview of different analytical and measurement techniques that are important to pharmacology and pharmaceutical sciences.				
Course Contents & Topics	Principles and Applications of different analytical and measurement t such as drug analysis and pharmacokinetics studies	echniques in pharm	aceutical sciences		
	Analysis and quality assurance: statistical analysis of data, control ch	art.			
	Analysis by Optical methods: Beer's Law; instrumentation, grating spectrometry: UV-visible, infrared, and atomic; emission spectrometry		ectors; absorption		

		eparation and Purification: partitio raphy (HPLC) and gas chromatograp			
	Molecular Mass Measurements: mass spectrometry-fundamental concepts; various ionization techniques including electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI); time-of-flight (TOF) and quadrupole (Q) mass analyzers; use of mass spectrometry in drug analysis				
		agnetic resonance: basic principles; i of biological and pharmaceutical impo		structure determination of	
Course Learning Outcomes	On comple	tion of the course, the students shoul	d be able to:		
	methods, n 2. Describe used in the 3. Apply	 Demonstrate knowledge and understanding of the principles of different optical methods, separation methods, mass spectrometry, NMR spectroscopy and their applications in pharmaceutical sciences. Describe the basic experimental set up and the properties of the basic components of the instruments used in the laboratory classes. Apply experimental skills in chemical analysis including sample preparation, standard solution preparation, instrument calibration, matrix effects correction (standard additions). 			
Pre-requisites (and Co-requisites and Impermissible combination)		m students only; and HM2136 Physical chemistry: principle	es and applications in pharmaceu	tical science	
Offer in 2014 - 2015	Y 2nd	sem	Examinati	on May	
Offer in 2015 - 2016	Υ			1	
Course Grade	A+ to F				
Grade Descriptors	Demonstrate thorough grasp of the subject Show evidence of strong analytical abilities, logical and independent thinking, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations Demonstrate highly proficient lab skills and techniques and critical use of data and results to draw appropriate and insightful conclusions Demonstrate highly effective organization and presentation skills.				
	В	B - Demonstrate substantial grasp of the subject Show evidence of analytical abilities and logical thinking, some evidence of independent thinking, and ability to apply knowledge to familiar and some unfamiliar situations Demonstrate proficient lab skills and techniques and correct use of data and results to draw appropriate conclusions Demonstrate effective organization and presentation skills.			
	С	- Demonstrate general but incomplete grasp of the subject Show evidence of some analytical abilities and logical thinking, little evidence of independent thinking, and ability to apply knowledge to most familiar situations Demonstrate adequate lab skills and techniques and mostly correct but some erroneous use of data and results to draw appropriate conclusions Demonstrate moderately effective organization and presentation skills.			
	D	- Demonstrate partial but limited grasp, with retention of some relevant information, of the subject Show evidence of limited analytical abilities, little or no evidence of independent thinking, and limited ability to apply knowledge to solve problems Demonstrate partially effective lab skills and techniques and limited ability to use data and results to draw appropriate conclusions Demonstrate limited or barely effective organization and presentation skills.			
	Fail	- Demonstrate little or no grasp of the know analytical abilities, logical and independer problems Demonstrate minimally effective and/or unable to draw appropriate conclusion	nt thinking, and very little or no ability e or ineffective lab skills and techniques a	to apply knowledge to solve and misuse of data and results	
Course Type	Lecture wit	h laboratory component course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			24	
	Laborator	y		28	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignme	nts	(continuous assessment)	30	
	Examinati	on		70	
Required/recommended reading and online materials		g, F.K. Holler, S.R. Crouch: Principles g, D.M. West, F.J. Holler, and S.R. (on).			
Additional Course Information	Laboratory pass this c	classes are mandatory. Students n	nust complete ALL experiments	and laboratory reports to	

CHEM3341 Inorganic che	3341 Inorganic chemistry II (6 credits) Academic Year 2014				
Offering Department	Chemistry Quota 82				
Course Co-ordinator	Prof V W W Yam, Chemistry (wwyam@hku.hk)				
Teachers Involved	Prof V W W Yam, Chemistry Dr A M Y Yuen, Chemistry				
Course Objectives		This course is a continuation from CHEM2341 Inorganic Chemistry I, with a more detailed treatment of general inorganic chemistry, with examples relevance to biological processes and material science, suited to the needs of those intending to extend their studies in chemistry.			
Course Contents & Topics	Chemistry of selected classes of inorganic, coordination and or mechanisms of their reaction where appropriate.	ganometallic compo	ounds including		
	Structure, bonding, magnetism and spectral properties of inorgan bioinorganic systems.	nic systems includir	ng examples in		

Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge of chemistry of selected classes of inorganic, coordination and organometallic compounds. 2. Understand structure, bonding, magnetism and spectral properties of inorganic systems. 3. Understand mechanisms of selected chemical reactions that are essential to coordination and organometallic compounds. 4. Gain appropriate knowledge of coordination compounds in biological systems.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in C	CHEM2341 Inorganic chemistry I	<u> </u>	
Offer in 2014 - 2015	Y 1s	t sem	Examinat	ion Dec
Offer in 2015 - 2016	Υ			'
Course Grade	A+ to F			
Grade Descriptors	A	the more advanced foundation knowled of inorganic, coordination and organon properties of inorganic systems includ integrate knowledge and theory relating strong ability to analyze novel problems insightful conclusions relating to the ess chemistry. Demonstrate highly effective	inderstanding of essential facts, concepts, pringe of inorganic chemistry, especially those re- netallic compounds; mechanisms of reactions in gexamples in bioinorganic systems. Show to the more advanced foundation knowledge and critical use of data and experimental re- nential and more advanced foundation principle laboratory skills and techniques, especially complexes, and their characterization by variations.	elated to structure and bonding s; and magnetic and spectral w strong ability to apply and a of inorganic chemistry. Show abults to draw appropriate and es and knowledge of inorganic in the synthesis and reactivity
	B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the more advanced foundation knowledge of inorganic chemistry, especially those related to structure and bonding of inorganic, coordination and organometallic compounds; mechanisms of reactions; and magnetic and spectral properties of inorganic systems including examples in bioinorganic systems. Show evidence to apply and integrate knowledge and theory relating to the more advanced foundation knowledge of inorganic chemistry. Show evidence to analyze novel problems and correct use of data and experimental results to draw appropriate conclusions relating to the essential and more advanced foundation principles and knowledge of inorganic chemistry. Demonstrate effective laboratory skills and techniques, especially in the synthesis and reactivity study of inorganic compounds and metal complexes, and their characterization by various spectroscopic methods.			
	C Demonstrate general but incomplete command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the more advanced foundation knowledge of inorganic chemistry, especially those related to structure and bonding of inorganic, coordination and organometallic compounds; mechanisms of reactions; and magnetic and spectral properties of inorganic systems including examples in bioinorganic systems. Show evidence of some abilities to apply and integrate knowledge and theory relating to the more advanced foundation knowledge of inorganic chemistry. Show ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to the essential and more advanced foundation principles and knowledge of inorganic chemistry. Demonstrate moderately effective laboratory skills and techniques, especially in the synthesis and reactivity study of inorganic compounds and metal complexes, and their characterization by various spectroscopic methods.			
	D	Demonstrate partial but limited commar and theories relating to the more advan- structure and bonding of inorganic, co magnetic and spectral properties of ino of limited abilities to apply and integrate of inorganic chemistry. Show limited at erroneous use of data and experimenta advanced foundation principles and kn	nd of knowledge and understanding of essent ced foundation knowledge of inorganic chemis ordination and organometallic compounds; nr ganic systems including examples in bioinorg knowledge and theory relating to the more ac- pility to analyze problems to most familiar situ I results to draw appropriate conclusions rela- owledge of inorganic chemistry. Demonstrat- synthesis and reactivity study of inorganic com	stry, especially those related to nechanisms of reactions; and ganic systems. Show evidence dvanced foundation knowledge lations and mostly correct but ting to the essential and more e partially effective laboratory
	Fail	principles, and theories relating to the m related to structure and bonding of inorg and magnetic and spectral properties of no evidence of abilities to apply and i knowledge of inorganic chemistry. She erroneous use of data and experimenta advanced foundation principles and kn	command of knowledge and understanding ore advanced foundation knowledge of inorga anic, coordination and organometallic compou inorganic systems including examples in bioin ntegrate knowledge and theory relating to the little or no ability to analyze problems to it results to draw appropriate conclusions relawledge of inorganic chemistry. Demonstrate synthesis and reactivity study of inorganic correctorscopic methods.	unic chemistry, especially those inds; mechanisms of reactions; lorganic systems. Show little or the more advanced foundation or most familiar situations and ting to the essential and more minimally effective laboratory
Course Type	Lecture v	vith laboratory component course		
Course Teaching	Activitie	es	Details	No. of Hours
& Learning Activities	Lectures			24
	Laborato			24
	Tutorials	3		6
	Reading	/ Self study		100
Assessment Methods and Weighting	Method	S	Details	Weighting in final course grade (%)
	Assignm	ents	including lab report & test	30
	Examina	ation		70
Required/recommended reading and online materials		Atkins, Inorganic Chemistry (4th Ede, Housecroft & Sharpe, Inorganic C	d.), Oxford University Press, 2005 hemistry (3nd Ed.), Prentice Hall, 200	08
Additional Course Information	Laborato pass this		s must complete ALL experiments a	and laboratory reports to

CHEM3342 Bioinorganic ch	chemistry (6 credits) Academic Year 2014		2014
Offering Department	Chemistry	Quota	50

Course Co-ordinator	Prof H Z	Sun, Chemistry (hsun@hku.hk)				
Teachers Involved		u Yeung, Chemistry Sun, Chemistry				
Course Objectives	and mor	This course is a continuation from Basic Inorganic Chemistry and Basic Organic Chemistry, giving further and more details of inorganic chemistry in biological system, with examples relevance to biological processes and medical science, suited to the needs of those intending to extend their studies in (bio) chemistry and biomedical science.				
Course Contents & Topics	biochem metals in	Bioinorganic Chemistry of selected topics of interest. Examples include the inorganic chemistry (and biochemistry) behind the requirement of biological cells for metals such as zinc, iron and copper; and metals in medicine such as mechanisms by which organisms obtain required metal ions from their environment, and use of metal-containing compounds in treating diseases such as cancer.				
Course Learning Outcomes	On succe	On successful completion of this course, students should be able to:				
	 Under Under 	 Understand the principles and concepts of inorganic/organic chemistry in biological system. Understand structure, bonding, and spectral properties of selected metals in proteins and nucleic acids. Understand chemical mechanisms of selected metal homeostasis (i.e. uptake, transport and storage). Understand the role of metal complexes medicine. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in 0	CHEM2341 Inorganic chemistry I				
Offer in 2014 - 2015	Y 2r	nd sem	Examination	n May		
Offer in 2015 - 2016	Υ		'	<u> </u>		
Course Grade	A+ to F					
Grade Descriptors	A	the basic foundation knowledge of I chelation; structure and bonding of n biological processes and their releva integrate knowledge and theory rela ability to analyze novel problems and conclusions relating to the basic prin	d understanding of essential facts, concepts, princip pioinorganic chemistry, especially those related to netals in biological systems; thermodynamic and kin nce to metal homeostasis; metal-based drugs. Show ting to the basic foundation knowledge of bioinorga d critical use of data and experimental results to dra nciples and knowledge of bioinorganic chemistry. It haracterization of inorganic active site and overall me	hard-soft acid-base theory; etic aspects of metal ions in v strong ability to apply and nic chemistry. Show strong w appropriate and insightful emonstrate highly effective		
	B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the basic foundation knowledge of bioinorganic chemistry, especially those related to hard-soft acid-base theory; chelation; structure and bonding of metals in biological systems; thermodynamic and kinetic aspects of metal ions in biological processes and their relevance to metal homeostasis; metal-based drugs. Show evidence to apply and integrate knowledge and theory relating to the basic foundation knowledge of bioinorganic chemistry. Show evidence to analyze novel problems and correct use of data and experimental results to draw appropriate conclusions relating to the basic principles and knowledge of bioinorganic chemistry. Demonstrate effective basic techniques, especially in the characterization of inorganic active site and overall metallo-biomolecules.					
	Demonstrate general but incomplete command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the basic foundation knowledge of bioinorganic chemistry, especially those related to hard-soft acid-base theory; chelation; structure and bonding of metals in biological systems; thermodynamic and kinetic aspects of metal ions in biological processes and their relevance to metal homeostasis; metal-based drugs. Show evidence of some abilities to apply and integrate knowledge and theory relating to the basic foundation knowledge of bioinorganic chemistry. Show ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to the basic principles and knowledge of bioinorganic chemistry. Demonstrate moderately effective basic techniques, especially in the characterization of inorganic active site and overall metallo-biomolecules.					
	Demonstrate partial but limited command of knowledge and understanding of essential facts, concepts, principles, and theories relating to the basic foundation knowledge of bioinorganic chemistry, especially those related to hard-soft acid-base theory; chelation; structure and bonding of metals in biological systems; thermodynamic and kinetic aspects of metal ions in biological processes and their relevance to metal homeostasis; metal-based drugs. Show evidence of limited abilities to apply and integrate knowledge and theory relating to the basic foundation knowledge of bioinorganic chemistry. Show limited ability to analyze problems to most familiar situations and mostly correct but erroneous use of data and experimental results to draw appropriate conclusions relating to the basic principles and knowledge of bioinorganic chemistry. Demonstrate partially effective basic techniques, especially in the characterization of inorganic active site and overall metallo-biomolecules.					
	Fail	Demonstrate little or no evidence principles, and theories relating to the to hard-soft acid-base theory; chelat kinetic aspects of metal ions in biold Show little or no evidence of abilitie knowledge of bioinorganic chemistry erroneous use of data and experime	of command of knowledge and understanding of e basic foundation knowledge of bioinorganic chemis ion; structure and bonding of metals in biological sy gical processes and their relevance to metal home is to apply and integrate knowledge and theory rela v. Show little or no ability to analyze problems to ntal results to draw appropriate conclusions relating try. Demonstrate minimally effective basic tech	stry, especially those related stems; thermodynamic and ostasis; metal-based drugs. ting to the basic foundation nost familiar situations and to the basic principles and		
Course Type	Lecture-l	based course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures			36		
			including literature survey &			
	Tutorials	S	presentation	12		
	Reading	g / Self study		100		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
and froignting			(continuous assessment of			
	Assignn	nents	,	25		
	Assignn		assignments and presentation)	75		

	Reactivity, University Science Books, 2007
Additional Course Information	Metals and Life, Moore C., RSC Publishing, 2010. Bioinorganic Chemistry: Inorganic Elements in the Chemistry of Life, Kaim W. & Schwederski B., John Wiley & Sons, 2013.

	try II (6 cr	edits)		Academic Year	2014	
Offering Department	Chemistry			Quota	90	
Course Co-ordinator	Prof D Yar	ng, Chemistry (yangdan@hku.hk)				
Teachers Involved	Prof D Yar	ng, Chemistry				
Course Objectives	focuses pr	s a continuation from CHEM1003, this course aims to provide a solid foundation of organic chemistry. It cuses primarily on the basic principles to understand the structure and reactivity of organic molecules, ith examples illustrating the role of organic chemistry in biology, medicine, and industry.				
Course Contents & Topics		hemistry of common organic functional groups: ketones and aldehydes; carboxylic acids and their erivatives; amines and heterocycles; aromatic chemistry. Principles of organic synthesis.				
Course Learning Outcomes	On succes	sful completion of this course, stude	nts should be able to:			
	2. Draw co 3. Underst 4. Write r carboxylic 5. Apprecia 6. Devise s	and employ the vocabulary of organic prrect structural representations of or and the basic principles of structure reasonable mechanisms for transferacids, acyl halides, anhydrides, este ate the importance of organic chemis synthetic pathways to organic compo the laboratory synthesis, purification	ganic molecules. and reactivity of organi ormations of carbony rs, amides), nitriles, ar stry in daily life. ounds using functional	I compounds (aldond amines. group chemistry.		
Pre-requisites and Co-requisites and mpermissible combination)		HEM2441 Organic chemistry I; and HEM3146 Principles of applications	s of spectroscopic tec	chniques, or alread	dy enrolled in this	
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective lab skills and techniques. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of					
	В					
	В	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of som	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk the analytical and critical abi	al abilities and logical to tive lab skills and technical tills required for attaining lities and logical thinking	thinking, and ability to eques. In a most of the course	
		the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk he analytical and critical abity y moderately effective lab sk of knowledge and skills requerent and logical thinking, by	all abilities and logical t titve lab skills and techni ills required for attainin lities and logical thinkin tills and techniques. uired for attaining some at with limited analytica	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities.	
	С	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher	ence of analytical and critic miliar situations. Apply effect mand of knowledge and skine analytical and critical abity moderately effective lab skof knowledge and skills requent and logical thinking, bolve problems. Apply partiamand of knowledge and skibilities, logical and coherent	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning	
ourse Type	C D Fail	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of som knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher show limited ability to apply knowledge to some concept outcomes. Lack of analytical and critical at	ence of analytical and critic miliar situations. Apply effect mand of knowledge and skine analytical and critical abity moderately effective lab skof knowledge and skills requent and logical thinking, bolve problems. Apply partiamand of knowledge and skibilities, logical and coherent	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning	
Course Teaching	C D Fail	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some coher show limited ability to apply knowledge to some contoutcomes. Lack of analytical and critical at knowledge to solve problems. Apply minim	ence of analytical and critic miliar situations. Apply effect mand of knowledge and skine analytical and critical abity moderately effective lab skof knowledge and skills requent and logical thinking, bolve problems. Apply partiamand of knowledge and skibilities, logical and coherent	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning	
Course Teaching	C D Fail	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some coher show limited ability to apply knowledge to some contoutcomes. Lack of analytical and critical at knowledge to solve problems. Apply minim	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ive analytical and critical abity moderately effective lab sk of knowledge and skills requirent and logical thinking, but solve problems. Apply partial mand of knowledge and skills requirent and logical thinking but solve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective land	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning e or no ability to apply No. of Hours	
Course Teaching	C D Fail Lecture with	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some concerns the state of analytical and critical at knowledge to solve problems. Apply minim	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ive analytical and critical abity moderately effective lab sk of knowledge and skills requirent and logical thinking, but solve problems. Apply partial mand of knowledge and skills requirent and logical thinking but solve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective land	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to iques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning e or no ability to apply	
Course Teaching	C D Fail Lecture with Activities Lectures	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some concerns the state of analytical and critical at knowledge to solve problems. Apply minim	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ive analytical and critical abity moderately effective lab sk of knowledge and skills requirent and logical thinking, but solve problems. Apply partial mand of knowledge and skills requirent and logical thinking but solve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective land	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to iques. g most of the course g, and ability to apply of the course learning I and critical abilities d techniques. g the course learning e or no ability to apply No. of Hour 2	
Course Teaching	C D Fail Lecture with Activities Lectures Laborator Tutorials	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some concerns the state of analytical and critical at knowledge to solve problems. Apply minim	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ive analytical and critical abity moderately effective lab sk of knowledge and skills requirent and logical thinking, but solve problems. Apply partial mand of knowledge and skills requirent and logical thinking but solve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective land	all abilities and logical thive lab skills and technicalls required for attaining lities and logical thinkin cills and techniques. Some of the control of t	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities d techniques. g the course learning e or no ability to apply No. of Hour	
Course Teaching & Learning Activities Assessment Methods	C D Fail Lecture with Activities Lectures Laborator Tutorials	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher show limited ability to apply knowledge to some coher show limited ability to apply knowledge to some conductomes. Lack of analytical and critical at knowledge to solve problems. Apply minim the laboratory component course	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ive analytical and critical abity moderately effective lab sk of knowledge and skills requirent and logical thinking, but solve problems. Apply partial mand of knowledge and skills requirent and logical thinking but solve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective land	all abilities and logical tivive lab skills and technilitive lab skills and technilities and logical thinkin kills and techniques. Justin and techniques. Justin and techniques and techniques and techniques. Justin and techniques and techniques are all the skills and techniques.	thinking, and ability to ques. g most of the course g, and ability to apply of the course learning I and critical abilities. d techniques. g the course learning e or no ability to apply No. of Hour:	
Course Teaching & Learning Activities Assessment Methods	C Fail Lecture wir Activities Lectures Laborator Tutorials Reading /	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete come learning outcomes. Show evidence of som knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher show limited ability to apply knowledge to show limited ability to apply knowledge to solve problems. Apply minim the laboratory component course showledge to solve problems. Apply minim the laboratory component course showledge to solve problems. Apply minim the laboratory component course showledge to solve problems.	ence of analytical and critic miliar situations. Apply effect mand of knowledge and sk ne analytical and critical abity moderately effective lab sk of knowledge and skills requent and logical thinking, bolve problems. Apply partial mand of knowledge and sk billities, logical and coherent ally effective or ineffective la	al abilities and logical tive lab skills and techni lities and logical thinkin tills required for attainin lities and logical thinkin tills and techniques. The state of the s	thinking, and ability to iques. g most of the course g, and ability to apply of the course learning I and critical abilities d techniques. g the course learning e or no ability to apply No. of Hour 2 Weighting in fina	
Course Teaching & Learning Activities Assessment Methods	C D Fail Lecture with Activities Lectures Laborator Tutorials Reading /	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some concurrence. Lack of analytical and critical at knowledge to solve problems. Apply minim the laboratory component course sentences.	ence of analytical and critic miliar situations. Apply effect mand of knowledge and skape analytical and critical ability moderately effective lability moderately effective lability moderately effective lability and solve problems. Apply partial mand of knowledge and skape mand of knowledge and skape milities, logical and coherent ally effective or ineffective labilities.	al abilities and logical tive lab skills and techni lities and logical thinkin tills required for attainin lities and logical thinkin tills and techniques. The state of the s	weighting in finacourse grade (%	
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading and online materials	C D Fail Lecture with Activities Lectures Laborator Tutorials Reading / Methods Assignme Examinati Paula Y. B J.McMurry	the course learning outcomes. Show evid apply knowledge to familiar and some unfa Demonstrate general but incomplete com learning outcomes. Show evidence of son knowledge to most familiar situations. Appl Demonstrate partial but limited command outcomes. Show evidence of some coher Show limited ability to apply knowledge to some concurrence. Lack of analytical and critical at knowledge to solve problems. Apply minim the laboratory component course sentences.	ence of analytical and critic miliar situations. Apply effect mand of knowledge and skine analytical and critical abity moderately effective lab skoof knowledge and skills requent and logical thinking, busolve problems. Apply partial mand of knowledge and skillities, logical and coherent ally effective or ineffective labelly effective and coherent ally effective and coherent ally effective or ineffective labelly effective and coherent ally effective or ineffective labelly effective and coherent	all abilities and logical to tive lab skills and technicities and logical thinking tills required for attaining lities and logical thinking tills and techniques. The street for attaining some at with limited analytically effective lab skills and lills required for attaining thinking. Show very little be skills and techniques.	thinking, and ability to iques. g most of the course g, and ability to apply of the course learning I and critical abilities d techniques. g the course learning e or no ability to appl No. of Hour 2 2 Weighting in fina course grade (%	

CHEM3442 Organic chemistry of biomolecules (6 credits)		A	cademic Year	2014	
Offering Department	Chemistry	Q	luota	50	
Course Co-ordinator	Dr P H Toy, Chemistry (phtoy@hku.hk)	Dr P H Toy, Chemistry (phtoy@hku.hk)			
Teachers Involved	Dr P H Toy, Chemistry				

Course Objectives		The major objective of this course is to give the students an understanding and appreciation of the role of organic chemistry in biology and biochemistry.				
Course Contents & Topics		The chemistry of organic molecule groups such as carbohydrates, amino acids, peptides, coenzymes, nucleotides and lipids will discussed. Enzyme catalysis, cofactors and inhibitors will also be presented.				
Course Learning Outcomes	1. Have a	On successful completion of this course, students should be able to: 1. Have a basic understanding of biologically important organic molecules. 2. Have a basic understanding of enzyme catalysis.				
		iate how organic chemistry plays an ir	,	oiochemistry.		
Pre-requisites (and Co-requisites and Impermissible combination)		HEM2442 Fundamentals of organic c acy students or CHEM3441 Organic c		damentals of	organic chemistry	
Offer in 2014 - 2015	Y 1st	sem	Exan	nination	Dec	
Offer in 2015 - 2016	Υ		'		'	
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an adva skills required for attaining all the course le thinking, with evidence of original thought, unfamiliar problems. Apply highly effective of	arning outcomes. Show strong ana and ability to apply knowledge to a	llytical and critic wide range of	al abilities and logical	
	В	Demonstrate substantial command of biomolecule organic chemistry with a broad range of knowledge, and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar problems. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of biomolecule organic chemistry knowledge, and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar problems. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of biomolecule organic chemistry knowledge, and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Fail Demonstrate little or no evidence of command of biomolecule organic chemistry knowledge, and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Examina	tion			60	
	Presenta	ation			10	
	Test		2-mid term tests		30	
Required/recommended reading and online materials	Paula Y. I	Bruice, "Organic Chemistry", 2011, 6th	n Edition, Pearson, Chapters	21-27.		

CHEM3541 Physical chem credits)	istry II: introduction to quantum chemistry (6	Academic Year	2014
Offering Department	Chemistry	Quota	80
Course Co-ordinator	Prof A S C Cheung, Chemistry (hrsccsc@hku.hk)		
Teachers Involved	Prof A S C Cheung, Chemistry		
Course Objectives	The course presents fundamental principles and topics on quant foundation for students intending to further their studies in chemis		o provide a soiled
Course Contents & Topics	Elementary quantum mechanics: Historical development, Postula quantum mechanics, Theory of angular momentum, Heisenbe simple systems: particle in a box, harmonic oscillator, rigid rotate electron atoms. Molecular structure and chemical bonds. Appr Hartree-Fock method, valence bond theory, and perturbation theory.	rg uncertainty principle or; Atomic structure: Hydoximation methods: va	. Applications to drogen and many
Course Learning Outcomes	On successful completion of this course, students should be able 1. Understand and use the terminology and nomenclature in quathe course. 2. Demonstrate knowledge and understanding of basic concept molecular structure. 3. Understand elementary numerical procedures and the basic molecular systems. 4. Hands-on experience of the application of Hartree-Fock method	antum chemistry and to ots in quantum mechal relationships of quantur	nics, atomic and

Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM2541 Physical chemistry I				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F	A+ to F			
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attain course learning outcomes. Show strong analytical and critical abilities and logical thinking, with thorough g subject, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apeffective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclu				thorough grasp of the ituations. Apply highly
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and substantial grasp of the subject, ability to apply knowledge to familiar and some unfamiliar situations. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.				
	С	Demonstrate general but incomplete comme learning outcomes. Show evidence of sor incomplete grasp of the subject, ability to a skills and techniques. Mostly correct but sor	ne analytical and critical aboply knowledge to most fam	pilities and logical thinl iliar situations. Apply m	king, and general but oderately effective lab
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show partial but limited grasp of the subject, retention of some relevant information of the subject, ability to apply knowledge to solve problems. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.			
	Fail	Demonstrate little or no evidence of comn outcomes. Lack of analytical and critical knowledge and understanding of the subje minimally effective or ineffective lab skills appropriate conclusions.	abilities, logical and coherence, very little or no ability to	ent thinking. Show little apply knowledge to s	e or no grasp of the solve problems. Apply
Course Type	Lecture w	rith laboratory component course			
Course Teaching	Activitie	s	Details		No. of Hours
& Learning Activities	Lectures				24
	Laborato	ory			24
	Tutorials				6
	Reading / Self study				100
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)
	Examina	tion			70
	Laborato	ory reports	Experiment & Lab	report	20
	Test		Test/Quiz		10
Required/recommended reading and online materials		Quarrie: Quantum Chemistry (2nd Edit n: Quantum Chemistry (5th Edition, 20		<u>'</u>	
Additional Course Information	Laborator pass this	y classes are mandatory. Students r course.	must complete ALL ex	periments and lab	poratory reports to

CHEM3999 Directed studie	s in chemistry (6 credits)	Academic Year	2014			
Offering Department	Chemistry	Quota				
Course Co-ordinator	Prof D L Phillips, Chemistry (phillips@hku.hk)	Prof D L Phillips, Chemistry (phillips@hku.hk)				
Teachers Involved	various teachers in the Department, Chemistry					
Course Objectives	This course is designed for second year students who would research. It offers students an opportunity to carry out small scale					
Course Contents & Topics	Students interested in taking this course should contact their proster the contents and the nature of their project in the coming acade prospective supervisor and the course coordinator is required.					
Course Learning Outcomes	On successful completion of this course, students should be able of the stand the terminology and nomenclature associated with worked on in the course. 2. Demonstrate knowledge and understanding of basic concepts in 3. Understand the relationships of the their particular chemical pro	th the small scale che	cal project.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in at least 24 credits of advanced level compulsory/co CHEM4XXX) in the Chemistry Major including a pass in CHEM2 Organic chemistry I or CHEM2541 Physical chemistry I or CHEM or CHEM3146 Principles and applications of spectroscopic technic This capstone course is for Chemistry Major students only.	341 Inorganic chemist 2442 Fundamentals of	ry I or CHEM2441			
Offer in 2014 - 2015	Y 2nd sem	Examination	No Exam			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors						

	A	Show an extensive comprehension of the presence of some originality. Illuminating utili wide range of high quality sources. Critical em conclusions. Demonstrate integration of a wid very effective organizational and presentation beyond that is required in wider areas relevan	zation and critical analysis / evaluation of info ployment of data and results to synthesize ap le range of appropriate theories, principles, da hal skills. [Work of A+ should demonstrate su	propriate and illuminating ata and methods. Employ
	В	Show a substantial comprehension of the s relevant information from sources. Demons secondary interpretations. Correct utilization of integration of theories, principles, data and me	trate ability to compose meaningful compar of data and results to form appropriate conclu	risons between different usions. Compose general
	С	Show a general but incomplete comprehensic use of relevant information from sources. interpretations. Mainly correct but some incc Demonstrate some partial integration of the organizational and presentational skills.	Demonstrate ability to compose compari- priect utilization of data and results to form	sons between different appropriate conclusions.
	D	Show a partial but limited comprehension, wit some coherent and logical thinking, but with I several sources, but mostly via summary inst results to form appropriate conclusions. Dem Perform limited or marginally effective organiz	limited analytical and critical abilities. Show ut ead of by analysis and comparison. Limited a constrate limited integration of theories, princi	tilization and reference of ability to employ data and
	Fail	Show little or no comprehension of the subject coherent thinking. Limited employment of set data and results and/or unable to form apprinciples, data and methods. Organization and methods.	condary sources and no critical comparison of ropriate conclusions. Demonstrate little or no	of them. Incorrectly utilize integration of theories,
Course Type	Project-ba	ased course		
Course Teaching & Learning Activities	Activities	s	Details	No. of Hours
a Learning Activities	Reading	/ Self study	discussion & meetings to be arranged by the student and the supervisor	96
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Dissertati	ion	including a written report and an oral presentation	100
Required/recommended reading	Recomme			
and online materials				

On Lemmara Oyunnou y, gro	up theory an	d applications (6 credits)	ademic Year	2014
Offering Department	Chemistry	Quo	ota	60
Course Co-ordinator	Prof V W W	Yam, Chemistry (wwyam@hku.hk)		
Teachers Involved	Prof V W W Y	Yam, Chemistry e, Chemistry		
Course Objectives	problems. The and vibration	e the concepts of symmetry and group theory and to applied to applied to the course also provides an introductory treatment of bonding all spectroscopy. This course is essential for students who wis emistry and all types of spectroscopy.	g theories, ino	rganic electroni
Course Contents & Topics	representation operators; hy	lements and symmetry operations; symmetry point group ins; character tables; direct products; symmetry-adapted li ybrid orbitals; molecular orbital theory for organic, inorganic lications in electronic and vibrational spectroscopy.	inear combina	tions; projection
	solving chem 2. Demonstr	nd the basic principles and concepts of symmetry and group nical problems. ate knowledge and understanding in the use of character t		
	orbitals for or 4. Demonstr	ate knowledge and understanding of bonding theories involvin ganic, inorganic and organometallic systems. ate knowledge and understanding in the application of sydvibrational spectroscopy.	ng hybrid orbita	ils and molecula
(and Co-requisites and	Demonstration orbitals for or 4. Demonstration electronic and the second s	ganic, inorganic and organometallic systems. ate knowledge and understanding in the application of sy	ng hybrid orbita	ils and molecula
(and Co-requisites and Impermissible combination)	Demonstration orbitals for or 4. Demonstration electronic and the second s	rganic, inorganic and organometallic systems. ate knowledge and understanding in the application of sy d vibrational spectroscopy. M3341 Inorganic chemistry II	ng hybrid orbita	ils and molecula
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Demonstration orbitals for or 4. Demonstration electronic and Pass in CHE	rganic, inorganic and organometallic systems. ate knowledge and understanding in the application of sy d vibrational spectroscopy. M3341 Inorganic chemistry II	ng hybrid orbita	, and molecula group theory in
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Demonstration orbitals for or 4. Demonstration electronic and Pass in CHE Y 1st set	rganic, inorganic and organometallic systems. ate knowledge and understanding in the application of sy d vibrational spectroscopy. M3341 Inorganic chemistry II	ng hybrid orbita	ils and molecula

		group theory.		
	В	Demonstrate substantial command of knowle theories relating to symmetry and group theorelated to symmetry elements and symme representations; character tables; direct pro- treatment of bonding theories including hybric systems; and applications in electronic and knowledge and theory relating to the basic applications in bonding, and electronic and vi- correct use of data and experimental resu- applications of symmetry and group theory.	ry and their applications in solving chemic try operations; symmetry point groups try operations; symmetry adapted linear combin d orbitals and molecular orbitals for organ d vibrational spectroscopy. Show evide principles and concepts of symmetry brational spectroscopy. Show evidence to	al problems, especially those is, reducible and irreducible ations; projection operators; ic, inorganic and orgametallic nce to apply and integrate and group theory and their analyze novel problems and
	С	Demonstrate general but incomplete comm principles, and theories relating to symmetry especially those related to symmetry elemeir reducible representations; character tables operators; treatment of bonding theories incli orgametallic systems; and applications in elecapply and integrate knowledge and theory retheory and their applications in bonding, as problems to most familiar situations and mos appropriate conclusions relating to the princip	and group theory and their applications into and symmetry operations; symmetry; direct products; symmetry-adapted line uding hybrid orbitals and molecular orbitatronic and vibrational spectroscopy. Show elating to the basic principles and concern delectronic and vibrational spectroscotly correct but erroneous use of data and	n solving chemical problems, point groups; reducible and ear combinations; projection als for organic, inorganic and vevidence of some abilities to epts of symmetry and group py. Show ability to analyze experimental results to draw
	D	Demonstrate partial but limited command of and theories relating to symmetry and group those related to symmetry elements and syr representations; character tables; direct protreatment of bonding theories including hybric systems; and applications in electronic and vintegrate knowledge and theory relating to the applications in bonding, and electronic and most familiar situations and mostly correct but conclusions relating to the principles and applications.	theory and their applications in solving commetry operations; symmetry point grounducts; symmetry-adapted linear combinal orbitals and molecular orbitals for organibrational spectroscopy. Show evidence or basic principles and concepts of symmetribrational spectroscopy. Show limited ait erroneous use of data and experimentations.	hemical problems, especially psecially gradinate and irreducible ations; projection operators; ic, inorganic and orgametallic f limited abilities to apply and try and group theory and their bility to analyze problems to
	Fail	Demonstrate little or no evidence of comm principles, and theories relating to symmetry especially those related to symmetry elemer irreducible representations; character tables operators; treatment of bonding theories inclorgametallic systems; and applications in el abilities to apply and integrate knowledge and group theory and their applications in bonding analyze problems to most familiar situations a conclusions relating to the principles and appl	and group theory and their applications into and symmetry operations; symmetry; direct products; symmetry-adapted linuding hybrid orbitals and molecular orbital ectronic and vibrational spectroscopy. So theory relating to the basic principles are, and electronic and vibrational spectroscond or and erroneous use of data and experiment	n solving chemical problems, point groups; reducible and ear combinations; projection als for organic, inorganic and how little or no evidence of nd concepts of symmetry and oppy. Show little or no ability to
Course Type	Lecture-bas	sed course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts	(continuous assessment)	25
	Examination	on		75
Required/recommended reading and online materials	F.A. Cotton	: Chemical Applications of Group The	ory (Wiley, 3rd ed., 1990)	

CHEM4143 Interfacial scie	nce and technology (6 credits)	A	cademic Year	2014
Offering Department	Chemistry	Q	uota	50
Course Co-ordinator	Prof G K Y Chan, Chemistry (hrsccky@hku.hk	k)		
Teachers Involved	Prof G K Y Chan, Chemistry Guest lecturer, Chemistry			
Course Objectives	To understand the science and technology of value added products and modern technologies		d processes ofter	n appeared in hiç
Course Contents & Topics	Physics and Chemistry of Interfaces: coamicroemulsion, thin films, nanomaterials, poro		colloids and into	erfaces, wetting
Course Learning Outcomes	On successful completion of this course, stude 1. Understand interfacial phenomena and thei 2. Solve problems in interfacial science and thermodynamics, and kinetics. 3. Be familiarized with technologies that requinanotechnology, detergency, composite polyn	r origin from molecular detable technology by applying ire application of interfacial	knowledge of g	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM3541 Physical chemistry II: intro	oduction to quantum chemi	istry	
Offer in 2014 - 2015	Y 2nd sem	E	xamination	May
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors				

	A	Demonstrate thorough knowledge of interfa all of the course learning outcomes. Show s original thought, and ability to apply knowled situations. Critical use of data and sourcing skills.	trong analytical and critical abilities and lo lge to solve problems in a wide range of c	gical thinking, with evidence of omplex, familiar and unfamiliar
	В	Demonstrate substantial knowledge of int attaining at least most of the course learnin thinking, and ability to apply knowledge to s data and sourcing of references. Apply effectives	g outcomes. Show evidence of analytical solve problems in familiar and some unfan	and critical abilities and logical niliar situations. Correct use of
	С	Demonstrate general but incomplete know required for attaining most of the course lea and logical thinking, and ability to apply kn some erroneous use of data and references	arning outcomes. Show evidence of some lowledge solve problems to most familiar	analytical and critical abilities situations. Mostly correct but
	D	Demonstrate partial but limited knowledge of attaining some of the course learning outcomited analytical and critical abilities. Show data and source references. Apply limited or	omes. Show evidence of some coherent imited ability to apply knowledge to solve	and logical thinking, but with problems. Limited ability to use
	Fail	Demonstrate little or no evidence of knowled for attaining the course learning outcomes Show very little or no ability to apply knowle presentational skills are minimally effective or	. Lack of analytical and critical abilities, dge to solve problems. Misuse of data and	logical and coherent thinking.
Course Type	Lecture-b	pased course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures	·		36
	Tutorials	•		12
	Reading	/ Self study		100
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)
	Assignm	ents	(continuous assessment)	30
	Examina	ation		70
Required/recommended reading and online materials	Barnes a	nd Gentle: Interfacial Science		

CHEM4144 Advanced mate	erials (6 cre	dits)	Academic Year	2014	
Offering Department	Chemistry		Quota	50	
Course Co-ordinator	Prof W K C	han, Chemistry <i>(waichan</i> @hku.hk)			
Teachers Involved		han, Chemistry g, Chemistry			
Course Objectives	overview o	e is a continuation from Introdution to Materials Chemistr n materials chemistry and application of materials in ad- nt in materials chemistry will also be discussed.			
Course Contents & Topics	polymeriza specialty a polymers,	Advanced polymerization methods: copolymerization and applications of copolymers, coordinate polymerization, control of stereochemistry in polymers; ionic and radical living polymerization. Materials specialty applications: high strength materials; high temperature polymers, polyelectrolytes, conduct polymers, optical information storage, sensors, photonics, electronics, nanotechnology. Advance materials characterization techniques.			
Course Learning Outcomes	Describe polymeriza	sful completion of this course, students should be able to: the mechanisms and kinetics of copolymerizations, coctions. examples of some engineering polymers for high temper	, ,	,	
	how are the 3. Demons	examples of some engineering polymers for high temper pir properties affected by the molecular structures. trate knowledge in advanced materials characterization ted and the working principles of materials for information stora	chniques.	,	
(and Co-requisites and	how are the 3. Demons 4. Understa	eir properties affected by the molecular structures. trate knowledge in advanced materials characterization ted	chniques.	,	
and Co-requisites and mpermissible combination)	how are the 3. Demons 4. Understa	eir properties affected by the molecular structures. trate knowledge in advanced materials characterization tec and the working principles of materials for information stora EM3143 Introduction to materials chemistry	chniques.	,	
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	how are the 3. Demons 4. Understa Pass in CH	eir properties affected by the molecular structures. trate knowledge in advanced materials characterization tec and the working principles of materials for information stora EM3143 Introduction to materials chemistry	chniques. age and opto-electro	nic applications.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	how are the 3. Demons 4. Understa Pass in CH	eir properties affected by the molecular structures. trate knowledge in advanced materials characterization tec and the working principles of materials for information stora EM3143 Introduction to materials chemistry	chniques. age and opto-electro	nic applications.	
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	how are the 3. Demons 4. Understa Pass in CH	eir properties affected by the molecular structures. trate knowledge in advanced materials characterization tec and the working principles of materials for information stora EM3143 Introduction to materials chemistry	chniques. age and opto-electro Examination Examination s, concepts, principles, and characterization of ma e and theory relating to novel problems and critical concepts and critical concepts.	May d theories relating to terials for advanced the synthesis and cal use of data and	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	how are the 3. Demons 4. Understa Pass in CH Y 2nd Y A+ to F	peir properties affected by the molecular structures. Itrate knowledge in advanced materials characterization ted and the working principles of materials for information store EM3143 Introduction to materials chemistry Sem Demonstrate thorough knowledge and understanding of essential facts frontier approach in polymer synthesis, properties, application, and technology. Show strong ability to apply and integrate knowledge applications of advanced materials. Show strong ability to analyze experimental results to draw appropriate and insightful conclusions or	Examination Examination Examination Examination Examination Examination Examination Examination I characterization of mae and theory relating to novel problems and critical relating to advanced manual of essential facts, concapplication, and charact ledge and theory relating well problems and correvel problems and correvel problems and correct ledge and theory relating well problems and correct ledge and theory relating the problems and correct ledge and theory relating the problems and correct ledge and theory relating the problems and correct ledge and the problems and critical ledge and the problems	May May May May May May May May	

	D	principles, and theories relating to from characterization of materials for advanced knowledge and theory relating to the synth problems to most familiar situations and mappropriate conclusions relating to advance Demonstrate partial but limited command of and theories relating to frontier approach materials for advanced technology. Show expenses the principle of the property of	I technology. Show evidence of some all hesis and applications of advanced mais sotly correct but erroneous use of data an d materials synthesis and their properties. of knowledge and understanding of essen in polymer synthesis, properties, applica	bilities to apply and integrate rials. Show ability to analyze d experimental results to draw tial facts, concepts, principles, ation, and characterization of
		relating to the synthesis and applications of familiar situations and mostly correct but conclusions relating to advanced materials	of advanced materials. Show limited ability erroneous use of data and experimenta	to analyze problems to most
	Fail	Demonstrate little or no evidence of comprinciples, and theories relating to from characterization of materials for advanced knowledge and theory relating to the synthamalyze problems to most familiar situations conclusions relating to advanced materials.	ntier approach in polymer synthesis, technology. Show little or no evidence of nesis and applications of advanced materi s and erroneous use of data and experimer	properties, application, and abilities to apply and integrate als. Show little or no ability to
Course Type	Lecture-ba	ased course		
Course Teaching	Activities	S	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading	/ Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	ents	(continuous assessment)	20
	Examinat	ion		80
Required/recommended reading and online materials		Principles of Polymerizations (John V cialist references will be given through		

CHEM4145 Medicinal cher	nistry (6 cr	dits)	Academic Year	2014
Offering Department	Chemistry		Quota	140
Course Co-ordinator	Prof H Z S	ın, Chemistry (hsun @hku.hk)		
Teachers Involved	Prof H Z S Dr H Hu, C	in, Chemistry nemistry		
Course Objectives	research in	e covers the chemical principles of drug design and drug at areas of bioorganic chemistry, bioinorganic chemistry, mand biotechnology.		
Course Contents & Topics	relationship screening - Drug-reco - Proteins - Metals in - DNA-Dru	scovery, design, and development: lead discovery, is (SAR), computer-aided drug design, combinatorial chaptor interactions and enzymes) and nucleic acids as drug targets medicine printeractions abolism and prodrugs and drug delivery		
Course Learning Outcomes	1. Demons	sful completion of this course, students should be able to: rate knowledge of drug discovery, design and development	t.	
		and drug-biomolecule interactions where appropriate. The propriate knowledge of drug metabolism and drug delivery.		
(and Co-requisites and	3. Gain ap		nistry of Biomolecul	es
(and Co-requisites and impermissible combination)	3. Gain ap	propriate knowledge of drug metabolism and drug delivery. EM3441 Organic chemistry II or CHEM3442 Organic Chem	nistry of Biomolecul	es May
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	3. Gain ap	propriate knowledge of drug metabolism and drug delivery. EM3441 Organic chemistry II or CHEM3442 Organic Chem		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	3. Gain ap Pass in Ch	propriate knowledge of drug metabolism and drug delivery. EM3441 Organic chemistry II or CHEM3442 Organic Chem		
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	3. Gain ap Pass in Ch Y 2nd Y	propriate knowledge of drug metabolism and drug delivery. EM3441 Organic chemistry II or CHEM3442 Organic Chem	examination concepts, principles, ar ose related to drug distinship; pharmacokinet mowledge and theory alyze novel problems ar sions relating to the b	May and theories relating to scovery, design and ics; drug delivery and relating to the basic and critical use of data asic principles and
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Gain appears in Characteristics Y 2nd Y A+ to F	Demonstrate thorough knowledge and understanding of essential facts, the basic foundation knowledge and understanding of essential facts, the basic foundation knowledge of medicinal chemistry, especially the development; drug targets; drug lead optimization; structure activity relati its relevance to toxicity. Show strong ability to apply and integrate k foundation knowledge of medicinal chemistry. Show strong ability to ana and experimental results to draw appropriate and insightful conclus knowledge of medicinal chemistry. Demonstrate highly effective basic te	concepts, principles, ar ose related to drug distionship; pharmacokinet inowledge and theory lalyze novel problems ar sions relating to the bischniques for medicinal of essential facts, concensistry; especially the timization; structure a dence to apply and integrations relating to the inclusions relating to the	May Ind theories relating to scovery, design and ice; drug delivery and relating to the basic principles and chemistry, especially epts, principles, and ser related to drug citivity relationship; grate knowledge and alyze novel problems basic principles and services and the control of the

		drug discovery; design and development; pharmacokinetics; drug delivery and its rele knowledge and theory relating to the basic problems to most familiar situations and mappropriate conclusions relating to the b moderately effective basic techniques, bas metabolism.	vance to toxicity. Show evidence of some foundation knowledge of medicinal cher sostly correct but erroneous use of data an asic principles and knowledge of medi-	abilities to apply and integrate nistry. Show ability to analyze d experimental results to draw cinal chemistry. Demonstrate
	D	Demonstrate partial but limited command of and theories relating to the basic foundation discovery; design and development; drn pharmacokinetics; drug delivery and its releknowledge and theory relating to the basic analyze problems to most familiar situations to draw appropriate conclusions relating to partially effective basic techniques for medic	on knowledge of medicinal chemistry; es ug targets; drug lead optimization; vance to toxicity. Show evidence of limited c foundation knowledge of medicinal che s and mostly correct but erroneous use of the basic principles and knowledge of me	pecially those related to drug ructure activity relationship; labilities to apply and integrate mistry. Show limited ability to data and experimental results dicinal chemistry. Demonstrate
	Fail	Demonstrate little or no evidence of comprinciples, and theories relating to the basic drug discovery; design and development; pharmacokinetics; drug delivery and its relintegrate knowledge and theory relating to ability to analyze problems to most familiar appropriate conclusions relating to the b minimally effective basic techniques for medium.	foundation knowledge of medicinal chemidrug targets; drug lead optimization; evance to toxicity. Show little or no evicithe basic foundation knowledge of medicisituations and erroneous use of data asic principles and knowledge of medicisituations.	stry; especially those related to structure activity relationship; lence of abilities to apply and nal chemistry. Show little or no d experimental results to draw cinal chemistry. Demonstrate
Course Type	Lecture-ba	ased course		
Course Teaching	Activitie	S	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading / Self study			100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	ents	(continuous assessment)	25
	Examina	tion		75
Required/recommended reading and online materials	Medicinal	uction to Medicinal Chemistry (3/e), G. Chemistry- An Introduction, G. Thoma S.J. Lippard (2004) Nat. Rev. Drug Di	as, John Wiley, 2000	
Additional Course Information	This corus	se is also offered to rpg students, but t	he course code for rpg students is	CHEM6113.

CHEM4241 Modern chemic	al instrumentation and applications (6 credits)	Academic Year	2014
Offering Department	Chemistry	Quota	50
Course Co-ordinator	Dr I K Chu, Chemistry (ivankchu@hku.hk)		
Teachers Involved	Dr I K Chu, Chemistry Dr W T Chan, Chemistry		
Course Objectives	The aim of the course is to provide an understanding of mod fundamental principles and practical aspects of instrument design. To those pursuing a higher research degree or a career in technical sa	he course will be of	
Course Contents & Topics	Biological Mass spectrometry: Liquid Chromatography-Tandem Mi Metabolomics. Laser Spectroscopy: Principle of laser; three-level and four-level lase and frequency conversion); laser-induced fluorescence; laser atomic signal-to-noise enhancement by boxcar integration and photon counti Atomic Plasma Spectrometry: Inductively couple plasma-atomic enmass spectrometry (ICP-MS); signal-production processes in I spectrometer; array detectors; interferences in ICP-AES and ICP-MS Atomic X-ray Spectrometry: x-ray fluorescence; wavelength-dispers (EDXRF) X-ray fluorescence spectrometers	ers; laser instruments; spectrometry; lase ing. nission spectrometr CP spectrometry;	ation (Q-switching r remote sensing; y (ICP-AES) and Echelle grating
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the principles of the modern mass spectrometric me identification and quantification. 2. Explain how proteins are identified and sequenced experiment proteomics experiments. 3. Use the database searching techniques and software tools to analy. 4. Apply LC/MS/MS method for target quantitative analysis of small methods. 5. Explain the principles of the laser spectroscopy, atomic plast spectrometry. 6. Describe the basic experimental set up and the properties of the used in the laboratory classes.	tally and how data yze high-throughput nolecules. ma spectrometry, a	is generated in proteomics data.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM3241 Analytical chemistry II: chemical instrumentation		
Offer in 2014 - 2015	Y 1st sem	Examination	Dec
Offer in 2015 - 2016	Υ		
Course Grade	A+ to F		
	396		

Grade Descriptors	A	Demonstrate thorough knowledge and under the modern chemical instrumentations and a theory, and strong ability to analyze problem design.	applications. Show strong ability to apply	and integrate knowledge and
	В	Demonstrate substantial command of know theories relating to the modern chemical ins knowledge and theory, and ability to analyz instrument design.	strumentations and applications. Show ev	vidence to apply and integrate
	С	Demonstrate general but incomplete communiciples and theories relating to the moder abilities to apply and integrate knowledge fundamental principles and practical aspects	n chemical instrumentations and application and theory, and to analyze problems	tions. Show evidence of some
	D	Demonstrate partial but limited command of and theories relating to the modern chemical apply and integrate knowledge and theory, a to fundamental principles and practical aspec	instrumentations and applications. Show and limited ability to analyze problems to a	evidence of limited abilities to
	Fail	Demonstrate little or no evidence of common principles and theories relating to the modern of abilities to apply and integrate knowledge situations related to fundamental principles a	n chemical instrumentations and application and theory, and little or no ability to ana	ons. Show little or no evidence lyze problems to most familiar
Course Type	Lecture wit	h laboratory component course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Laborator	у		16
	Tutorials			12
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts	(continuous assessment)	30
	Examinati	on		70
Required/recommended reading and online materials		nss: Fundamentals of contemporary m g, F.K. Holler, S.R. Crouch: Principles		
Additional Course Information		to published material will be made thr classes are mandatory. Students mourse.		and laboratory reports to

CHEM4242 Analytical che	mistry (6 credits)	Academic Year	2014
Offering Department	Chemistry	Quota	50
Course Co-ordinator	Dr K M Ng, Chemistry (kwanmng@hku.hk)		
Teachers Involved	Dr K M Ng, Chemistry		
Course Objectives	This course focuses on the basic principle, practice and method analysis. The course emphasizes on the integration of analytical practical analytical and bioanalytical problems. This course will be pa to pursue their career related to analytical and bioanalytical chemistry	concepts and techi articularly useful for s	nologies to solve
Course Contents & Topics	Analytical measurement concepts: Statistical treatment & evaluati Figures of merits of analytical methods; Validation of analytical methods; and testing laboratories Theoretical background and practical techniques of sample preparation preparation and enrichment techniques for biomedical, pharmaceu Advanced separation technologies for complex mixture analysis (e.g. methods for chromatographic analysis and spectroscopic detection techniques based on mass spectrometry Problem-based design of analytical strategy for chemical & biocipractical knowledge and experience related to selected fields of the strategy for chemical is a strategy for chemical in the selected fields of the sele	on, separation and clical and forensic c. multidimensional Liion; Analytes char	detection: Sample hemical analysis .C); Derivatization acterization and
Course Learning Outcomes	analytical chemistry literature/ scenario. On successful completion of this course, students should be able to: 1. apply statistical methods to assess analytical measurement data or validate analytical methods and results 2. demonstrate understanding on the working principle of different their advantages and limitations 3. integrate different analytical techniques to solve analytical and bload	quality and interpret	their significance
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM3241 Analytical chemistry II: chemical instrumental analysis	tion or CHEM3242	Food and wate
Offer in 2014 - 2015	Y 2nd sem	Examination	May
Offer in 2014 - 2015 Offer in 2015 - 2016	Y 2nd sem	Examination	May

Grade Descriptors	A	course learning outcomes. Show strong ar	sed level of extensive knowledge and skills re nalytical and critical abilities, logical thinking omplex issues and problems related to chemi as shown in class work.	and capability to apply
	В	the course learning outcomes. Show eviden	oad range of knowledge and skills required for ce of analytical and critical abilities, logical to e of complex issues and problems related to as shown in class work.	hinking, and capability to
	С	outcomes. Show evidence of analytical and	ledge and skills required for attaining mos critical abilities, logical thinking, and ability to problems related to chemical analysis. Apply	apply knowledge learnt to
	D	learning outcomes in Food and Water Anal limited analytical and critical abilities. Show I	d of knowledge and skills required for attair ysis. Show evidence of some coherent and imited ability to apply knowledge to solve pro anization and presentation skill as shown in cla	logical thinking, but with blems related to chemical
	Fail	outcomes. Lack of analytical and critical abili	mand of knowledge and skills required for att ties, logical and coherent thinking. Show very nemical analysis. Organization and presenta k.	little or no ability to apply
Course Type	Lecture wit	th laboratory component course		
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Laboratory	y	6 x 4-hour of laboratory practical	24
	Tutorials			6
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts		5
	Examinati	on		70
	Laboratory	y reports	Experiment & Lab report	15
	Test		Test/Quiz	10
Required/recommended reading and online materials		og, D. M. West, F. J. Holler, S.R. Catest edition)	rouch: Fundamentals of Analytical	Chemistry (Cengage
Additional Course Information		s to specialist texts and other publishe classes are mandatory. Students mourse.		

CHEM4341 Advanced inor	anic chemistry (6 credits)		Academic Year	2014
Offering Department	Chemistry		Quota	60
Course Co-ordinator	Prof C M Che, Chemistry (cmche@hku.hk)			
Teachers Involved	Prof C M Che, Chemistry Prof V W W Yam, Chemistry Prof H Z Sun, Chemistry			
Course Objectives	This course is a continuation from Intermediat treatment to topics in Inorganic Chemistry and radvance topics will be introduced in the later parfor graduate work.	new areas of interest.	Problem based lea	rning on selected
Course Contents & Topics	Selected advanced topics of current interest. multiple bonds, inorganic and supramolecular medicinal chemistry, and activation of small mole	photochemistry, lant	hanide chemistry, I	
Course Learning Outcomes	On successful completion of this course, student 1. Understand the electronic structure and be bonded metal complexes. 2. Understand the principles and concepts of ino 3. Understand and realize the activation of smal importance of such activation in chemical cataly reactions. 4. Introduction to the chemistry of lanthanide c science, catalysis and biomedical sciences. 5. Understand the role of metal complexes in biomedical sciences.	ondings of novel me rganic and supramole Il molecules by transi vsis of global interest oordination compoun	ecular photochemist tion metal complex , green chemistry a ds and their applic	ery. es and realize the nd energy saving
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in CHEM3341 Inorganic chemistry II (Students are strongly recommended to take Chwish to take this course.)	HEM4142 Symmetry,	group theory and a	pplications if they
Offer in 2014 - 2015	Y 1st sem		Examination	Dec
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	Demonstrate thorough knowledge and under	rstanding of essential facts	s, concepts, principles ar	nd theories relating to

	A	the frontiers in inorganic chemistry. Show str ability to analyze novel problems in inorgani skills.		
	В	Demonstrate substantial command of knowled theories relating to the more advanced know knowledge and theory, and ability to analyze and presentational skills.	ledge in inorganic chemistry. Show evidence	ce to apply and integrate
	С	Demonstrate general but incomplete comma principles and theories relating to the more a abilities to apply and integrate knowledge a inorganic chemistry. Apply moderately effective	advanced knowledge in inorganic chemistry. and theory, and to analyze problems to m	Show evidence of some
	D	Demonstrate partial but limited command of and theories relating to the more advanced k apply and integrate knowledge and theory, inorganic chemistry. Demonstrate partially effe	nowledge in inorganic chemistry. Show evid and limited ability to analyze problems to n	ence of limited abilities to nost familiar situations in
	Fail	Demonstrate little or no evidence of common principles and theories relating to the more ad- abilities to apply and integrate knowledge an situations in inorganic chemistry. Demonstrate	vanced knowledge in inorganic chemistry. Shad theory, and little or no ability to analyze	now little or no evidence of problems to most familiar
Course Type	Lecture-bas	sed course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials		including literature survey & presentation	12
	Reading /	Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	nts	(continuous assessment)	20
	Examination	on		80
Required/recommended reading and online materials	F.A. Cotton	ı, G. Wilkinson, Hurillo and Bochmann:	Advance Inorganic Chemistry (Wile	y, 1999, 6th ed.)
Additional Course Information	References	s to specialist texts and other published	d materials will be made throughout	the course.

CHEM4342 Organometal	lic chemistry	(6 credits)	Academic Year	2014
Offering Department	Chemistry		Quota	40
Course Co-ordinator	Prof V W V	V Yam, Chemistry (wwyam@hku.hk)		
Teachers Involved		V Yam, Chemistry Yeung, Chemistry		
Course Objectives	Chemistry	rther, more detailed, treatment to organometallic ch. II. The course also aims to introduce and familis, and to prepare students for graduate work in inorga	liarize students with adv	anced laborator
Course Contents & Topics		Main group and transition metal organometallics. T and reactivities of organometallics. Application of		
	synthesis	 To introduce and familiarize students with advance and manipulation of air- and moisture- sensitive of ectroscopic methods. 		
Course Learning Outcomes	1. Understa 2. Demons transition r metal alkyl 3. Demons polymeriza 4. Demons	sful completion of this course, students should be ab- and the advanced principles and concepts in organo- strate knowledge and understanding in the bonding, s- netal organometallics, especially in transition metal of idynes. strate knowledge and understanding in the applicati- tion and catalysis. strate ability in advanced laboratory techniques inclu- ure- sensitive compounds, and their characterization	metallic chemistry. structure and reactivities oclusters, metal alkyls, metal on of organometallics in outling the synthesis and m	al alkylidenes ar organic synthesi anipulation of a
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ch	HEM3341 Inorganic chemistry II		
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough knowledge and understanding of essenthe more detailed and advanced treatment of organometallic chand reactivities of main group and transition metal organ application of organometallics in organic synthesis and cat knowledge and theory relating to the advanced principles and ability to analyze novel problems and critical use of data and e conclusions relating to the advanced principles and applicative fifective advanced laboratory skills and techniques, especially	nemistry, especially those related ometallics; transition metal clu lalysis. Show strong ability to d concepts of organometallic che experimental results to draw appurons of organometallic chemistry	to structure, bondir ster chemistry; an- apply and integrat emistry. Show stror copriate and insightf Demonstrate high

		sensitive compounds and the	ir characterization by various spectroscopic method	s.
	В	theories relating to the more to structure, bonding and rechemistry; and application o integrate knowledge and theoevidence to analyze novel conclusions relating to the acadvanced laboratory skills a	mand of knowledge and understanding of essendetailed and advanced treatment of organometallic activities of main group and transition metal organ forganometallics in organic synthesis and cataly rry relating to the advanced principles and concept problems and correct use of data and experiming vanced principles and applications of organometal and techniques, especially in the synthesis and in techniques, especially in the synthesis and in characterization by various spectroscopic method	chemistry, especially those related nometallics; transition metal cluster ysis. Show evidence to apply and so forganometallic chemistry. Show ental results to draw appropriate lic chemistry. Demonstrate effective manipulation of air- and moisture-
	С	principles, and theories relatir those related to structure, be metal cluster chemistry; and some abilities to apply and i organometallic chemistry. St erroneous use of data and ey and applications of organom	complete command of knowledge and understang to the more detailed and advanced treatment of onding and reactivities of main group and transitic application of organometallics in organic synthesi integrate knowledge and theory relating to the adow ability to analyze problems to most familiar operimental results to draw appropriate conclusions tetallic chemistry. Demonstrate moderately effective synthesis and manipulation of air- and moisture ectroscopic methods.	organometallic chemistry, especially on metal organometallics; transition is and catalysis. Show evidence of vanced principles and concepts of situations and mostly correct but a relating to the advanced principles we advanced laboratory skills and
	D	and theories relating to the related to structure, bonding cluster chemistry, and applic abilities to apply and integrorganometallic chemistry. Sherroneous use of data and evand applications of organor	ed command of knowledge and understanding of e- more detailed and advanced treatment of organor and reactivities of main group and transition met- ation of organometallics in organic synthesis and rate knowledge and theory relating to the adve- we limited ability to analyze problems to most famil operimental results to draw appropriate conclusions metallic chemistry. Demonstrate partially effective e-synthesis and manipulation of air- and moisture electroscopic methods.	metallic chemistry, especially those al organometallics; transition metal catalysis. Show evidence of limited anced principles and concepts of iar situations and mostly correct but relating to the advanced principles e advanced laboratory skills and
	Fail	principles, and theories relatir those related to structure, but metal cluster chemistry; and evidence of abilities to apply a organometallic chemistry. Sho of data and experimental resu of organometallic chemistry.	dence of command of knowledge and understaring to the more detailed and advanced treatment of onding and reactivities of main group and transitic application of organometallics in organic synthes and integrate knowledge and theory relating to the above little or no ability to analyze problems to most faults to draw appropriate conclusions relating to the above the draw appropriate conclusions relating to the above the draw appropriate conclusions relating to the above the draw appropriate conclusions and the draw appropriate conclusions relating to the above the draw appropriate conclusions relating to the above the draw appropriate conclusions relating to the draw appropriate conclusions of air- and moisture- sensitive compounds a	organometallic chemistry, especially on metal organometallics; transition is and catalysis. Show little or no advanced principles and concepts of amiliar situations and erroneous use divanced principles and applications by skills and techniques, especially
Course Type	Lecture w	ith laboratory component o	course	
Course Teaching	Activitie	S	Details	No. of Hours
& Learning Activities	Lectures			24
	Laborato	ry		30
	Tutorials	•		5
	Reading	/ Self study		100
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)
	Assignm	ents	(continuous assessment)	30
	Examina	tion	,	70
Required/recommended reading and online materials			Chemistry of the Transition Metals (Wiley Organometallics - A Concise Introduction	
Additional Course Information		y classes are mandatory.	er published materials will be made throu Students must complete ALL experime	

CHEM4441 Advanced orga	anic chemistry (6 credits)	Academic Year	2014
Offering Department	Chemistry	Quota	80
Course Co-ordinator	Prof D Yang, Chemistry (yangdan@hku.hk)		
Teachers Involved	Prof D Yang, Chemistry Dr X C Li, Chemistry		
Course Objectives	To provide students with knowledge in organic chemistry reaction structure determination.	mechanisms and o	rganic compound
Course Contents & Topics	The course covers chemical bonding, advanced stereochemistry, c investigating reaction mechanisms, reactive intermediates, rearreactions.		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe, analyze and interpret the structure and reactivity relation. 2. Identify and predict the selectivities (chemoselectivity, regioselect reactions. 3. Describe the general approaches to study organic mechanisms. 4. Have a general understanding and working knowledge of perior (radicals, carbenes and nitrenes), and polar rearrangements. 5. Suggest reasonable mechanistic pathways for some types of organic forms.	nship of organic mole stivity and stereosele yelic reactions, reactions.	ectivity) in organic
Pre-requisites	Pass in CHEM3441 Organic chemistry II		
	400		

(and Co-requisites and Impermissible combination)						
Offer in 2014 - 2015	Y 19	st sem			Examination	Dec
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	course learning	orough mastery at an adva outcomes. Show strong a lity to apply knowledge to	nalytical and critical abiliti	es and logical thinking,	with evidence of original
	В	the course learn	bstantial command of a bing outcomes. Show evice to familiar and some unfa	dence of analytical and cr		
	С	learning outcom	neral but incomplete com es. Show evidence of sor ost familiar situations.			
	D	outcomes. Show	rtial but limited command v evidence of some cohe lity to apply knowledge to	erent and logical thinking,		
	Fail		le or no evidence of com of analytical and critical a lve problems.			
Course Type	Lecture-	based course				
Course Teaching	Activiti	es		Details		No. of Hours
& Learning Activities	Lecture	S				36
	Tutorial	S				12
	Reading	g / Self study				100
Assessment Methods and Weighting	Method	ls		Details		Weighting in final course grade (%)
	Assignr	nents		(continuous asse	essment)	30
	Examin	ation				70
Required/recommended reading and online materials	Springer J. McMu	r, 2007. rry, "Organic Che	perg, "Advanced Orgenistry", 8th Ed., Tho actions", Oxford University	mson Brooks/Cole, 2		lechanism", 5th Ed.:

CHEW4443 Integrated org	anic synthesis (6 credits)	Academic Year	2014
Offering Department	Chemistry	Quota	50
Course Co-ordinator	Prof P Chiu, Chemistry (pchiu@hku.hk)		
Teachers Involved	Prof P Chiu, Chemistry		
Course Objectives	To introduce aspects of modern organic reactions with releval natural products, drugs and medicinal chemistry to provide ar provide training in advanced organic laboratory skills, and fur characterization, as preparation for graduate studies or researce	n integrated approach to the integrated approach	he subject, and t
Course Contents & Topics	Building on the organic chemistry covered in the foundational course will present modern synthetic methods and synthetic plassed on target drug molecules. In each unit, the chemical presented and the syntheses of these molecules are introduced the reactions involved with emphasis on their mechanisms limitations. Concept of synthetic design including retrost enantioselective control elements will be emphasized. A la practical skills of synthesis.	planning. The course is or al biology of these comp ed, accompanied by in-de s, selectivity, stereochem synthetic analysis, stere	ganized into unit ounds are briefly pth discussions of istry, scope and oselectivity and
Course Learning Outcomes	On successful completion of this course, students should be al	-1- 4	
	Understand the conditions, selectivities, mechanisms of sev. Apply the knowledge of organic reactions toward solving pro-	eral classes of important re	
Pre-requisites (and Co-requisites and	Understand the conditions, selectivities, mechanisms of seving sever seving seving seving seving seving seving seving seving sevin	eral classes of important re	
Pre-requisites and Co-requisites and mpermissible combination)	Understand the conditions, selectivities, mechanisms of sev. Apply the knowledge of organic reactions toward solving pro-	eral classes of important re	
Pre-requisites and Co-requisites and mpermissible combination) Offer in 2014 - 2015	Understand the conditions, selectivities, mechanisms of sev. Apply the knowledge of organic reactions toward solving propagation. Pass in CHEM3441 Organic chemistry II	eral classes of important rebblems in synthesis and sy	nthetic design.
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Understand the conditions, selectivities, mechanisms of sev. Apply the knowledge of organic reactions toward solving propagation. Pass in CHEM3441 Organic chemistry II Y 2nd sem	eral classes of important rebblems in synthesis and sy	nthetic design.
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Understand the conditions, selectivities, mechanisms of sev. Apply the knowledge of organic reactions toward solving property. Pass in CHEM3441 Organic chemistry II Y 2nd sem	eral classes of important residents in synthesis and understanding of stry. Show a strong ability to intechemistry situations and problem and complex synthetic problems and complex synthetic problems.	May concepts, principles egrate knowledge and s. Show a critical us.

	С	Demonstrate a general but incomplete com and mechanisms related to synthetic organ theory, and evidence of some ability to anal use of knowledge to apply to the solution o and application of lab skills and techniques i	ic chemistry. Show evidence of yze synthetic organic chemistry f most familiar problems. Demo	some ability to integrate knowledge and situations and problems. Show a correct
	D	Demonstrate a partial but limited command mechanisms related to synthetic organic of theory, and a limited ability to analyze fam knowledge to apply to the solution of mo application of lab skills and techniques in sy	nemistry. Show evidence of a I iliar situations and problems. S st familiar problems. Demonst	imited ability to integrate knowledge and Show some correct but erroneous use of
	Fail	Demonstrate little or no evidence of comm and mechanisms related to synthetic organ and theory in synthetic organic chemistry, Show mostly erroneous use of knowledge effective organization and application of lab	ic chemistry. Show little or no eand little or no ability to analyze to apply to the solution of fa	evidence of ability to integrate knowledge te most familiar situations and problems. Imiliar problems. Demonstrate minimally
Course Type	Lecture v	with laboratory component course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
& Learning Activities	Lectures			24
	Laborat	ory		25
	Reading	g / Self study		100
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)
	Examina	ation		65
	Laborat	ory reports		25
	Test			10
Required/recommended reading and online materials		synthesis, C. Willis, M. Wills, Oxford Sc s, top synthetic routes, J. Saunders, O		s
Additional Course Information	Laborato pass this	ry classes are mandatory. Students recourse.	nust complete ALL expe	riments and laboratory reports to

r X C Li, Che understand generate ology, medic hemical biologemistry, che n successful Understand Give exampith altered fur Compare ch	emistry (xuechenl@hku.hk) emistry d how to use chemical approaches to emulate biological new functional molecules. Useful as an introduction cinal chemistry and biotechnology. Togy of nucleic acids, protein chemistry, protein posttransion glycobiology and tools and techniques in chemical completion of this course, students should be able to: I chemical biology approaches in studying biology. Toles of how to use chemical methods to produce natural broadings. The medical biology and traditional biology approaches in drugstated to the state of t	to research in a slational modification biology.	reas of chemica
r X C Li, Che o understand nd generate ology, medic hemical biolo nemistry, che n successful Understand Give examp iht altered fur Compare ch ass in CHEM	emistry d how to use chemical approaches to emulate biological new functional molecules. Useful as an introduction cinal chemistry and biotechnology. ogy of nucleic acids, protein chemistry, protein posttranslemical glycobiology and tools and techniques in chemical completion of this course, students should be able to: I chemical biology approaches in studying biology. oles of how to use chemical methods to produce natural binctions. nemical biology and traditional biology approaches in drug draditional chemistry II or BIOC3601 Metabolism	to research in a slational modification biology.	reas of chemica
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Understand Give examp iht altered fur Compare ch ass in CHEM	I chemical biology approaches in studying biology. bles of how to use chemical methods to produce natural biologs. netions. nemical biology and traditional biology approaches in drug //3441 Organic chemistry II or BIOC3601 Metabolism		new biomolecule
2nd sem			
	П	Examination	May
+ to F			
co tho eff	ourse learning outcomes. Show strong analytical and critical abilities ar ought, and ability to apply knowledge to a wide range of complex, fam fective organizational and presentational skills. Insightful use and critica	ınd logical thinking, witl miliar and unfamiliar sit	h evidence of origina tuations. Apply highl
the ap Cri	e course learning outcomes. Show evidence of analytical and critical oply knowledge to familiar and some unfamiliar situations. Apply effect ritical use of relevant information from sources, showing ability to make	l abilities and logical the tive organizational and	hinking, and ability to I presentational skills
lea kn rel	arning outcomes. Show evidence of some analytical and critical abilitinowledge to most familiar situations. Apply moderately effective organ elevant information from sources, showing ability to make comparison	ies and logical thinking inizational and present	g, and ability to appl tational skills. Use o
ou Sh pre	utcomes. Show evidence of some coherent and logical thinking, but how limited ability to apply knowledge to solve problems. Apply limi resentational skills. Use and reference of several sources, but mainly	with limited analytical nited or barely effective	and critical abilities e organizational and
	CC the first the	course learning outcomes. Show strong analytical and critical abilities at thought, and ability to apply knowledge to a wide range of complex, far effective organizational and presentational skills. Insightful use and critic from a full range of high quality sources and to quote/reference aptly. Demonstrate substantial command of a broad range of knowledge and the course learning outcomes. Show evidence of analytical and critica apply knowledge to familiar and some unfamiliar situations. Apply effect Critical use of relevant information from sources, showing ability to mak secondary interpretations and to quote/reference aptly. Demonstrate general but incomplete command of knowledge and skill learning outcomes. Show evidence of some analytical and critical abilitik knowledge to most familiar situations. Apply moderately effective organized relevant information from sources, showing ability to make compariso quote/reference aptly. Demonstrate partial but limited command of knowledge and skills require outcomes. Show evidence of some coherent and logical thinking, but Show limited ability to apply knowledge to solve problems. Apply limpresentational skills. Use and reference of several sources, but mainly comparison. Demonstrate little or no evidence of command of knowledge and skills.	course learning outcomes. Show strong analytical and critical abilities and logical thinking, wit thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar si effective organizational and presentational skills. Insightful use and critical analysis / evaluatior from a full range of high quality sources and to quote/reference aptly. Demonstrate substantial command of a broad range of knowledge and skills required for atta the course learning outcomes. Show evidence of analytical and critical abilities and logical that apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and Critical use of relevant information from sources, showing ability to make meaningful comparis secondary interpretations and to quote/reference aptly. Demonstrate general but incomplete command of knowledge and skills required for attaining learning outcomes. Show evidence of some analytical and critical abilities and logical thinking knowledge to most familiar situations. Apply moderately effective organizational and presen relevant information from sources, showing ability to make comparisons between different i quote/reference aptly. Demonstrate partial but limited command of knowledge and skills required for attaining some outcomes. Show evidence of some coherent and logical thinking, but with limited analytical Show limited ability to apply knowledge to solve problems. Apply limited or barely effective presentational skills. Use and reference of several sources, but mainly through summary rate

	Fail	outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to app knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Limite use of secondary sources and no critical comparison of them.			
Course Type	Lecture-b	pased course			
Course Teaching	Activitie	9S	Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods	s	Details	Weighting in final course grade (%)	
	Examina	ation		60	
	Test		tests & presenations	40	
Required/recommended reading and online materials	Foundation	ons of Chemical Biology by C	M. Dobson, J.A. Gerrard and A.J. Pratt.		

CHEM4541 Physical cher theory (6 credits)	mistry III: st	atistical thermodynamics and kine	Academic \	'ear 2014	
Offering Department	Chemistry	/	Quota	40	
Course Co-ordinator	Dr H Hu,	Chemistry (haohu@hku.hk)		·	
Teachers Involved	Dr H Hu,	Chemistry			
Course Objectives		se presents fundamental principles and top provide a solid foundation for students intel elds.			
Course Contents & Topics	- Thermoder - Ensember - Systems - Molecular - Ideal garen - Lattice services - Quantur	Principles of Statistical Thermodynamics - Thermodynamic laws - Ensembles and partition functions: microcanonical, canonical and grand-canonical - Systems of independent molecules: ideal gas - Molecular degrees of freedom: translation, rotation, vibration, and electronic - Ideal gas mixture: chemical equilibrium, binding, and titration - Lattice statistics: Ising model and phase transition - Quantum statistics Chemical equilibrium and kinetic theory - Rate theory: collision theory, transition state theory			
Course Learning Outcomes	1. Unders discussed 2. Demon	On successful completion of this course, students should be able to: 1. Understand and use the terminology and nomenclature in statistical thermodynamics and topics discussed in the course. 2. Demonstrate knowledge and understanding of basic concepts in statistical thermodynamics. 3. Understand correlation between macroscopic observables and microscopic statistical model systems.			
Pre-requisites (and Co-requisites and mpermissible combination)	Pass in C	Pass in CHEM3541 Physical chemistry II: introduction to quantum chemistry			
Offer in 2014 - 2015	Y 2nd	d sem	Examinatio	n May	
Offer in 2015 - 2016	Υ		<u>'</u>	·	
Course Grade	A+ to F				
Grade Descriptors	A	A Thorough mastery at an advanced level of extensive knowledge of statistical thermodynamics and reaction dynamics. Demonstrate evidence of strong analytical / critical abilities and logical thinking. Can apply the knowledge to practical questions in Physical Chemistry.			
	В	B Substantial command of knowledge of statistical thermodynamics and reaction dynamics. Demonstrate evidence of analytical / critical abilities and logical thinking. Understand the scope of Physical Chemistry questions that can be applied with the knowledge.			
	С	C General but incomplete command of knowledge of statistical thermodynamics and reaction dynamics. Demonstrate evidence of analytical thinking. Can apply the knowledge to familiar situations.			
	D	Partial but limited command of knowledge of knowledge of statistical thermodynamics and reaction dynam Demonstrate limited evidence of analytical thinking. Understand the question to be solved with knowledge.			
	Fail	Little or no evidence of command of knowledge of	statistical thermodynamics and reac	tion dynamics.	
Course Type	Lecture w	ith laboratory component course			
Course Teaching	Activitie	s D	etails	No. of Hours	
& Learning Activities	Lectures			24	
	Laborato	ry		24	
	Tutorials				
		/ O - 16 - 4 · · · · ·			
	Reading	/ Self study		100	

and Weighting			course grade (%)
	Assignments	continuous assessment of on class quizzes & assignments	40
	Examination		60
Required/recommended reading and online materials	T. L. Hill, An introduction to Statistical Thermodyl P. Atkins, Physical Chemistry	namics	
Additional Course Information	Laboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to pass this course.		

CHEM4542 Computational	Chemistry	(o credits)		Academic Year	2014
Offering Department	Chemistry	,		Quota	60
Course Co-ordinator	Prof G H (Chen, Chemistry (ghc@yangtze.hku.	hk)		
Teachers Involved	Prof G H (Dr H Hu, (Chen, Chemistry Chemistry			
Course Objectives	dynamics	This course covers topics in computational chemistry including first-principles methods and molecular dynamics methods. It is offered to undergraduate and postgraduate students interested in computational chemistry, computational physics and computational biology.			
Course Contents & Topics		ock molecular orbital method, dens ds, QM/MM method, free energy cal			
Course Learning Outcomes	On succes	ssful completion of this course, stude	ents should be able to:		
	 Understances Employ 	Understand the basic concepts of density-functional theory. Understand the basic numerical techniques of molecular mechanics method and quantum mechanics/molecular mechanics method. Employ the existing computational software to calculate the chemical, physical properties of various molecular systems include organic molecules, inorganic materials and biomolecules.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in C mechanics	CHEM3541 Physical chemistry II: ir s.	ntroduction to quantum	n chemistry or PH	YS3351 Quantum
Offer in 2014 - 2015	Y 2nd	2nd sem Examination			May
Offer in 2015 - 2016	N				
Course Grade	A+ to F				
Grade Descriptors	Mastery of advanced knowledge on following topics: density-functional theory, Kohn-Sham equation, time-dependent density-functional theory, open system, molecular dynamics, force field, and quantum mechanics/molecular mechanics. Strong analytical and critical abilities and logical thinking, with strong ability to apply knowledge to practical problems in physical chemistry.				
	B Substantial command of a broad range of knowledge on following topics: density-functional theory, Kohn-Sham equation, time-dependent density-functional theory, open system, molecular dynamics, force field, and quantum mechanics/molecular mechanics. Evidence of analytical and critical abilities and logical thinking, with ability to apply knowledge to practical problems in physical chemistry.				
	С	Command of knowledge on following topics: density-functional theory, Kohn-Sham equation, time-dependent density-functional theory, open system, molecular dynamics, force field, and quantum mechanics/molecular mechanics. Evidence of some analytical and critical abilities and logical thinking, with ability to apply knowledge to familiar problems in physical chemistry.			
	D	Partial but limited command of knowledge on following topics: density-functional theory, Kohn-Sham equation, time dependent density-functional theory, open system, molecular dynamics, force field, and quantum mechanics/molecular mechanics. Evidence of some coherent analytical and critical abilities and logical thinking, with limited ability to apply knowledge to practical problems in physical chemistry.			
	Fail	Little or no evidence of command of knowledge on following topics: density-functional theory, Kohn-Sham equation, time-dependent density-functional theory, open system, molecular dynamics, force field, and quantum mechanics/molecular mechanics. Lack of analytical and critical abilities and logical thinking, with very little or no ability to apply knowledge to practical problems in physical chemistry.			
Course Type	Lecture wi	ith laboratory component course			
Course Teaching	Activities	S	Details		No. of Hours
& Learning Activities	Lectures				24
	Laborator	ry	lab sessions 6x computational laboration		24
	Tutorials			,	6
	Reading /	/ Self study			100
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%
	Assignme	ents	(continuous asses		30
	Examinat		,	,	70
Required/recommended reading and online materials	Attila Szabo & Neil S. Ostlund: Modern Quantum Chemistry (1st ed.) Robert G. Parr & Weitao Yang: Density-Functional Theory of Atoms and Molecules J.M. Haile: Molecular Dynamics Simulation Andrew R. Leach: Molecular Modelling - Principles and Applications				

Additional Course Information	This course is equivalent to CHEM6109 Computational Chemistry.	
	CHEM4542 is offered every other year.	
	Laboratory classes are mandatory. Students must complete ALL experiments and laboratory reports to	
	pass this course.	

CHEM4543 Advanced phys	sical chemi	stry (6 credits)		Academic Year	2014
Offering Department	Chemistry			Quota	80
Course Co-ordinator	Prof G H C	Chen, Chemistry (ghc@yangtze.hku.hl	k)		
Teachers Involved	Prof G H C Prof D L P	Chen, Chemistry hillips, Chemistry			
Course Objectives	This course covers advanced topics in physical chemistry. It is offered for students majoring in physical chemistry and for students who are interested in postgraduate studies.				
Course Contents & Topics	photochem	Time-resolved spectroscopy methods, excited states and reactive intermediates, photophysics and photochemical processes, chemical reaction mechanisms, advanced quantum mechanical methods, reaction pathways and surface crossings.			
Course Learning Outcomes	Understa dynamics;Understa dynamics;	sful completion of this course, student and the basic concepts of quantun and Hartree-Fock method, statistical and the elementary numerical procedur	n chemistry, statisti ensembles, quantur	n statistics, H-theo	rem, and reaction
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ch	HEM3541 Physical chemistry II: introd	uction to quantum ch	emistry	
Offer in 2014 - 2015	Y 2nd	sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Mastery of advanced knowledge on following topics: variation method in quantum mechanics, Hartree-Fock method, perturbation theory, advanced statistical thermodynamics, reaction dynamics. Strong analytical and critical abilities and logical thinking, with strong ability to apply knowledge to practical problems in physical chemistry.				
	B Substantial command of a broad range of knowledge on following topics: variation method in quantum mechanics, Hartree-Fock method, perturbation theory, advanced statistical thermodynamics, reaction dynamics. Evidence of analytical and critical abilities and logical thinking, with ability to apply knowledge to practical problems in physical chemistry.				
	С	Command of knowledge on following topics: variation method in quantum mechanics, Hartree-Fock method, perturbation theory, advanced statistical thermodynamics, reaction dynamics. Evidence of some analytical and critical abilities and logical thinking, with ability to apply knowledge to familiar problems in physical chemistry.			
	D	Partial but limited command of knowledge on following topics: variation method in quantum mechanics, Hartree-Fock method, perturbation theory, advanced statistical thermodynamics, reaction dynamics. Evidence of some coherent analytical and critical abilities and logical thinking, with limited ability to apply knowledge to practical problems in physical chemistry.			
	Fail	Little or no evidence of command of knowledge on following topics: variation method in quantum mechanics, Hartree-Fock method, perturbation theory, advanced statistical thermodynamics, reaction dynamics. Lack of analytical and critical abilities and logical thinking, with very little or no ability to apply knowledge to practical problems in physical chemistry.			
Course Type	Lecture-ba	sed course			
Course Teaching	Activities	;	Details		No. of Hours
& Learning Activities	Lectures		-		36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods	·	Details		Weighting in final course grade (%)
	Assignme	ents	(continuous asses		20
	Examination			80	
Required/recommended reading and online materials	P. W. Atkins: Physical Chemistry Ira N. Levine: Quantum Chemistry (Prentice Hall, 4th ed.) R. C. Tolman: The Principles of Statistical Mechanics R. D. Levine, R. B. Bernstein: Molecular Reaction Dynam				
Course Website	Nil				
Additional Course Information	Nil				

CHEM4910 Chemistry literacy and research (6 credits)		Academic Year	2014	
Offering Department Chemistry Quota				
Course Co-ordinator	Dr X Li, Chemistry (xiangli @hku.hk)	Dr X Li, Chemistry (xiangli @hku.hk)		
Teachers Involved	Nil, Chemistry			
Course Objectives	This course is designed for final year students who would like to gain experience on research methods and techniques by working on small projects on literature research and chemistry research.			

Course Contents & Topics	The course provides training on chemistry literature research techniques. Students will work on a small project on literature research and a short laboratory-based research project. Thelaboratory-based projects are provided by the students' supervisorswho are assigned by the department.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge of academic databases and search engines of chemistry literature 2. Understand the terminology and nomenclature associated with their own research project 3. Demonstrate knowledge and understanding of the chemical techniques they used to do the research in their own research project 4. Demonstrate knowledge and understanding of the results of their own research project and its context in the broader research area				
Pre-requisites (and Co-requisites and Impermissible combination)	CHEM4XX instrumen CHEM354	at least 24 credits of advanced leve XX) in the Chemistry Major inclu- tation; and CHEM3341 Inorganic chall Physical chemistry II: introduction to tone course is for Chemistry Major students.	iding CHEM3241 Analytical che emistry II; and CHEM3441 Orga quantum chemistry.	emistry II: chemical	
Offer in 2014 - 2015	Y 2nd	l sem	Examination	No Exam	
Offer in 2015 - 2016	Υ			'	
Course Grade	A+ to F				
Grade Descriptors	A Show an extensive comprehension of the research project. Demonstrate very able analytical and critical trespense of some originality. Illuminating utilization and critical analysis / evaluation of information acquivide range of high quality sources. Critical employment of data and results to synthesize appropriate and conclusions. Demonstrate integration of a wide range of appropriate theories, principles, data and methovery effective organizational and presentational skills. [Work of A+ should demonstrate substantial addibeyond that is required in wider areas relevant to the topic.]				
	B Show a substantial comprehension of the research project. Demonstrate able analytical and critical thinking with use of relevant information from sources. Demonstrate ability to compose meaningful comparisons between different secondary interpretations. Correct utilization of data and results to form appropriate conclusions. Compose general integration of theories, principles, data and methods. Perform effective organizational and presentational skills.				
	C Show a general but incomplete comprehension of the research project. Presence of some analytical and critical thinking with use of relevant information from sources. Demonstrate ability to compose comparisons between different interpretations. Mainly correct but some incorrect utilization of data and results to form appropriate conclusions. Demonstrate some partial integration of theories, principles, data and methods. Perform moderately effective organizational and presentational skills.				
	D	Show a partial but limited comprehension, with knowledge of some relevant information, of the research project. Presence of some coherent and logical thinking, but with limited analytical and critical abilities. Show utilization and reference of several sources, but mostly via summary instead of by analysis and comparison. Limited ability to employ data and results to form appropriate conclusions. Demonstrate limited integration of theories, principles, data and methods. Perform limited or marginally effective organizational and presentational skills.			
	Fail	Show little or no comprehension of the rese logical and coherent thinking. Limited emp Incorrectly utilize data and results and/or una of theories, principles, data and methods. Or	arch project. Evidence of little or lack of an loyment of secondary sources and no cr ible to form appropriate conclusions. Demor	alytical and critical abilities, itical comparison of them. astrate little or no integration	
Course Type	Laborator	y and workshop course			
Course Teaching	Activitie	s	Details	No. of Hours	
& Learning Activities	Laborato	ry		50	
	Tutorials			6	
	Reading	/ Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Presenta	tion	written reports and presentations	100	
Required/recommended reading and online materials	Reading materials will be assigned depending on the project.				
Additional Course Information		are expected to have satisfactorily cor I be counted towards the Capstone rec		ctory completion of this	

CHEM4911 Capstone expe (6 credits)	erience for chemistry undergraduates: HKUtopia	Academic Year	2014		
Offering Department	Chemistry Quota				
Course Co-ordinator	Dr A P L Tong, Chemistry (apltong@hku.hk)				
Teachers Involved	TBC, Chemistry				
Course Objectives	This project-based course with the theme of Chemistry for a Bette provide students with a capstone experience. It aims to enable st the world is facing with that have to be solved by chemistry and reapply what they have learnt in classroom and conduct literature research and related technology under development to solve the various channels.	udents to think what a elated technology. Sto search regarding ac	are the key issues udents will need to vanced chemistry		
Course Contents & Topics	No formal teaching. It is expected that students devote 120-140 hours to working on this project. Students will work in groups of two or three, under the supervision of the course coordinator. The duration of the project will be two to three months. The time of running this project-based course is in the summer (May - August).				
Course Learning Outcomes	, , , ,				

	be used to 2. Integra 3. Work in 4. Expres 5. Develo	e and evaluate the various issues we be solve the problems. It theory and practice, and to unders a team and to collaborate with peops scientific ideas effectively in both we prurther logical, critical thinking and the to others the appreciation for cher	etand limitations of their curren ble with different background. rritten and oral forms. creativity.	t knowledge	•	
Pre-requisites (and Co-requisites and Impermissible combination)	24 credits Students	are expected to have satisfactorily or of advanced level compulsory/core who are interested in taking the cour tone course is for Chemistry Major s	chemistry courses in the Cher se should contact the Departn	nistry Major	•	
Offer in 2014 - 2015	Y Sur	mmer	Exam	ination	No Exam	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A					
	В	Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Show general integration of theories, principles, evidence and techniques. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Show some partial integration of theories, principles, evidence and techniques. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Show limited integration of theories, principles, evidence and techniques. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Show little or no or inapt integration of theories, principles, evidence and techniques. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Project-ba	ased course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Meeting	with supervisor	Tutorials		10	
	Reading	/ Self study			60	
	Assessm	ent	Group work or project		70	
Assessment Methods and Weighting				Weighting in final course grade (%)		
	Research	n report			100	
Required/recommended reading and online materials	No specif channels	No specific list of textbooks and references. Students are encouraged to obtain information via various channels (main library, e-journals, internet, and discussions with classmates and teachers, etc.).				
Course Website	http://wwv	v.chemistry.hku.hk/hkutopia/				

CHEM4966 Chemistry inte	rnship (6 credits)	Academic Year	2014		
Offering Department	Chemistry	Quota			
Course Co-ordinator	Dr W T Chan, Chemistry (wtchan@hku.hk)				
Teachers Involved	TBC, Chemistry				
Course Objectives	This course aims to offer students the opportunities to gain work exp major of study. The workplace learning experience would be of great knowledge gained in the study to the real work environments. Studer of internship work either within the University or outside the University	benefits to the stud its have to take on	lents to apply their at least 160 hours		
Course Contents & Topics	- Within the University: The student will be supervised by a staff mem or various tasks as instructed by the Supervisor Outside the University: The student will work in an external agenc student will be supervised under a staff member of the external agenc member of the Department/School of the student (the Internal Supervis student will normally be instructed by the External Supervisor, w Supervisor.	y related to the may (the External Supposor). The work to be	ajor of study. The ervisor) and a staff e performed by the		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Apply knowledge in their major study in solving practical problems in 2. Gain first hand work experience in the industry related to their major	knowledge in their major study in solving practical problems in the work place.			

Pre-requisites (and Co-requisites and Impermissible combination	CHEM4XX	Pass in at least 24 credits of advanced level compulsory/core chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Chemistry Major students only.			
Offer in 2014 - 2015	Y 2nd	sem Summer	Examination	No Exam	
Offer in 2015 - 2016	Υ				
Course Grade	Pass/Fail				
Grade Descriptors	Pass	Pass Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work required in the job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s), colleagues, and clients in the job. Successfully fulfills the requirements set out in the Course Description regarding working hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating excellent performance in the above would be awarded a grade of "Distinction".			
	Fail	assigned by supervisor(s). Fails to e	ms in the workplace. Fails to handle or carry out the establish effective collaboration or communication o satisfy the requirements set out in the Course Destion by supervisor(s), etc.	with supervisor(s), other	
Course Type	Internship				
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours	
a Learning Activities	Internship	p work	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)	160	
Assessment Methods and Weighting	Methods	.	Details	Weighting in final course grade (%)	
	Written re	eport	written report, employer's feedback and oral presentation	100	
Additional Course Information	those who Satisfacto internship Distinction obtain the Enrolmen	b have completed Year 2. In completion of this course cal will be recorded on the student' basis. Students who are interest approval. of this course is not conducted the relevant Department/School	completed their Year 3 study. Special corn be counted towards the Capstone recision transcript. This course will be assesse sted to enrol in this course should contain via the online course selection system office after approval has been obtained.	quirement. Details of d on "Pass, Fail and ict the Department to and should be made	

CHEM4999 Chemistry proj	ject (12 cre	dits)			Academic Year	2014
Offering Department	Chemistry				Quota	
Course Co-ordinator	Dr J Y Tai	ng, Chemistry (jinyao @hku.hk)			
Teachers Involved	various te	achers in the D	epartment, Chemisti	у		
Course Objectives		To provide experience of research techniques by working on a short project under the direct supervision a member of staff. This course would prepare students for graduate school work in chemistry.				
Course Contents & Topics	A short re	search project	provided by a memb	er of staff (e.g. the stude	ents supervisor).	
Course Learning Outcomes	1. Unders 2. Demon their own 3. Demon	In successful completion of this course, students should be able to: Understand the terminology and nomenclature associated with their own research chemistry project. Demonstrate knowledge and understanding of the chemical techniques they used to do the research eir own chemical project. Demonstrate knowledge and understanding of the results of their own chemistry project and its content the broader research area.				
Pre-requisites (and Co-requisites and Impermissible combination)	CHEM4XX instrumen CHEM354	(X) in the (tation, and Chartelet The American Chartelet The Chartele	Chemistry Major ir HEM3341 Inorganic	level compulsory/core locluding CHEM3241 chemistry II, and CH to quantum chemistry. students only.	AnalyticaÍ chemistry EM3441 Organic ch	II: chemistr
Offer in 2014 - 2015	N				Examination	
Offer in 2015 - 2016	Y					
Course Grade	A+ to F					
Course Grade Grade Descriptors	A+ to F	presence of so wide range of h conclusions. Do very effective of	me originality. Illuminating igh quality sources. Critic emonstrate integration of	e research project. Demonstra g utilization and critical analys al employment of data and res a wide range of appropriate thational skills. [Work of A+ sh evant to the topic.]	sis / evaluation of informati sults to synthesize appropri neories, principles, data an	on acquired from ate and illumination d methods. Emplo
		presence of so wide range of h conclusions. Do very effective obeyond that is r Show a substand of relevant info secondary intel	me originality. Illuminating in the properties of the properties o	g utilization and critical analys al employment of data and res a wide range of appropriate the tational skills. [Work of A+ sh	sis / evaluation of informati sults to synthesize appropri neories, principles, data an nould demonstrate substan atte able analytical and critic me meaningful comparisons m appropriate conclusions	on acquired from ate and illuminating the methods. Emploitial additional wo at thinking with use between difference. Compose gener

	D	Show a partial but limited comprehension, with knowledge of some relevant information, of the reseat Presence of some coherent and logical thinking, but with limited analytical and critical abilities. Show uti reference of several sources, but mostly via summary instead of by analysis and comparison. Limite employ data and results to form appropriate conclusions. Demonstrate limited integration of theories, prin and methods. Perform limited or marginally effective organizational and presentational skills.			
	Fail	Show little or no comprehension of the research project. Evidence of little or lack of analytical and critical abilitiogical and coherent thinking. Limited employment of secondary sources and no critical comparison of the Incorrectly utilize data and results and/or unable to form appropriate conclusions. Demonstrate little or no integral of theories, principles, data and methods. Organization and presentational skills are of very limited use or ineffect			
Course Type	Project-bas	sed course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Reading / Self study		8 hours per week for 24 weeks or longer discussions & meetings	192	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Dissertation		including a written report and an oral presentation	100	
Required/recommended reading and online materials	Specialist t	Specialist texts dependant on the selected topic.			
Additional Course Information	Third year	students with exceptional academic ac	hievement may also apply for this co	ourse	

ENVS3042 Pollution (6 c	redits)		Academic Year	2014		
Offering Department	Chemistr	У	Quota	60		
Course Co-ordinator	Dr W T C	han, Chemistry (wtchan@hku.hk)				
Teachers Involved		Dr J D Gu, Biological Sciences Dr W T Chan or Prof D L Phillips (in alternate year), Chemistry				
Course Objectives	the impace	To introduce students to the principles of chemical and biological processes of pollution development and the impacts of pollution on environmental health. The course provides the basics for advanced courses of environmental toxicology, environmental monitoring and testing, environmental impact assessment biodiversity, waste treatment and technologies, and environmental remediation.				
Course Contents & Topics	and biod status; p pollutants pollution and was	Types of pollution and associated characteristics; strategy of pollution reduction and treatment; chemical and biochemical processes involved in pollution development; indicators and (bio)markers of pollution status; pollution monitoring techniques and application; interactions between biological systems and pollutants in aquatic and terrestrial environments; chemical toxicity, exposures and risk assessment pollution of air, water and soil; global climate change, and stratospheric-ozone depletion; water pollution and wastewater treatment; harmful algal blooms; solid and hazardous waste; soil pollution and temporary and and tempo				
Course Learning Outcomes	1. Explair 2. Explair 3. Explair	On successful completion of this course, students should be able to: 1. Explain types of pollution and their impact to the environment and population. 2. Explain mechanisms of pollution development. 3. Explain indicators and biomarkers of pollution and monitoring techniques of pollution. 4. Explain strategy of pollution reduction, treatment and remediation.				
	5. Explair	5. Explain chemical toxicity and risk assessment.				
Pre-requisites (and Co-requisites and Impermissible combination)	ENVS130	Pass in ENVS1401 Introduction to environmental science or BIOL1110 From molecules to cells of ENVS1301 Environmental life science; and CHEM2041 Principles of chemistry or ENVS2002 Environmental field and lab course or ENVS2002 Environmental data analysis				
Offer in 2014 - 2015	Y 2n	d sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemical instrumentations and applications. Show strong ability to apply and integrate knowledge and theory, and strong ability to analyze problems related to fundamental principles and practical aspects of instrument design.				
	В	B Demonstrate substantial command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemical instrumentations and applications. Show evidence to apply and integrate knowledge and theory, and ability to analyze problems related to fundamental principles and practical aspects of instrument design.				
	С	C Demonstrate general but incomplete command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemical instrumentations and applications. Show evidence of some abilities to apply and integrate knowledge and theory, and to analyze problems to most familiar situations to fundamental principles and practical aspects of instrument design.				
	D	D Demonstrate partial but limited command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemical instrumentations and applications. Show evidence of limited abilities to apply and integrate knowledge and theory, and limited ability to analyze problems to most familiar situations related to fundamental principles and practical aspects of instrument design.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and understanding of essential facts, concepts, principles and theories relating to the modern chemical instrumentations and applications. Show little or no evidence of abilities to apply and integrate knowledge and theory, and little or no ability to analyze problems to most familiar situations related to fundamental principles and practical aspects of instrument design.				
Course Type	Lecture v	rith laboratory component course				

& Learning Activities	Activities	Details	No. of Hours	
	Lectures		24	
	Laboratory		36	
	Reading / Self study		100	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	
	Assignments	student-based assessment - lab report, review report, group project and presentation	40	
	Examination		60	
Required/recommended reading and online materials	Marquita K. Hill: Understanding Environr	nental Pollution (Cambridge University Press	s, 2nd edition)	
Additional Course Information	aboratory classes are mandatory. Students must complete ALL experiments and laboratory reports ass this course.			

CSCI9001 Practical Chines	se for scien	ce students (6 credits)		Academic Year	2014	
Offering Department	Chinese			Quota		
Course Co-ordinator	Mr K W Wo	ong, Chinese <i>(kwwongb@hkusua.hku.l</i>	hk)			
Teachers Involved	Dr K T Lam Dr S F Lee					
Course Objectives	helps the semails, letter resentation	This course aims to enhance the students' competence using Chinese for professional communication. helps the students to master the techniques of writing different types of documents such as memos emails, letters, announcements, notice, brochures, leaflets, and reports. In addition, topics addressing resentation and discussion techniques, the style and rhetoric of reader-based writings are included to heighten the students' linguistic sensitivity.				
Course Contents & Topics	messages: Techniques	& vocabulary of modern Chinese - T good-news and goodwill messages of writing electronic documents: ema posals and presentations	s, bad-news messa	ges, and persuas	ive messages -	
Course Learning Outcomes	modern Ch practical w discussions Chinese w	On successful completion of the course, students should be able to: - Develop a balanced competency modern Chinese and write well-formed sentences; - Employ rhetorical devices and stylistics, as well a practical writing skills specific to their discipline; - Explore new tactics of communication, initiat discussions and debates and address new challenges; - Apply their disciplinary knowledge and the Chinese writing skills and professional presentation techniques analytically, critically and creatively different social or professional discourses.				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 1st s	Y 1st sem 2nd sem			Dec May	
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A The student acquired a superb ability to achieve the intended learning outcomes of the course at all levels of learning: describe, apply, evaluate, and synthesize the language techniques for effective communication in all situations.					
	B The student acquired the ability to achieve the intended learning outcomes of the course at all levels of learning: describe, apply, evaluate, and synthesize the language techniques for effective communication in most situations.					
	С					
	D	The student only has basic familiarity with the subject.				
	Fail	The student has very limited familiarity with the	e subject.			
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures		Details		12	
	Tutorials				12	
	Group work				24	
	Reading / Self study		Online learning homework (12% assessment (preparation) (12%)	(24%), %) and ncluding	72	
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)	
	Examination	Examination			50	
	Assignments		Written project an quiz (40%) and disscussion (10%)		50	
Required/recommended reading and online materials	用》。香港 大學出版社 傳意大全》 語文學部, 《企業文案					

EASC1020 Introduction to				Academic Year	2014
Offering Department	Earth Scie			Quota	
Course Co-ordinator		, Earth Sciences (zhliu@hku.hk)			
Teachers Involved		, Earth Sciences Earth Sciences			
Course Objectives	This course provides an introduction to the study of global climate systems and climate change. We stud the controls of temporal and spatial variations in earth's climate and its histories of past climates preserve in the geological record. We look at modern research methods that are used in paleoclimatic and paleoenvironmental reconstructions.				
Course Contents & Topics	Global climatic systems, climate classification, natural variability of climate, physical causes for change through geologic time, external and internal forcing mechanisms, solar orbital variations, major climatic events of the past and their effects on how our planet has developed, glacial and interglacial oscillations predicting future global change.				ns, major climatic
Course Learning Outcomes	On succes	sful completion of this course, stude	nts should be able to:		
	 Explain Underst 	major aspects of climatology and ap the factors and physical processes of and the driving forces of Earth's clim ize the history of Earth's climate cha	controlling climate systemate change.		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL				
Offer in 2014 - 2015	Y 2nd	2nd sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Demonstrate critical use of data and results to draw appropriate and insightful conclusions. Show insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate correct use of data and results to draw appropriate conclusions. Show critical use of relevant information from sources and ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly.			
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Demonstrate mostly correct but some erroneous use of data and results to draw appropriate conclusions. Show use of relevant information from sources and ability to make comparisons between different interpretations and to quote/reference aptly.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Demonstrate limited ability to use data and results to draw appropriate conclusions. Show use and reference of several sources, but mainly through summary rather than analysis and comparison.			
	Fail	Demonstrate little or no evidence of com outcomes. Lack of analytical and critical al knowledge to solve problems. Demonst conclusions. Show limited use of secondar	bilities, logical and coherent rate misuse of data and i	thinking. Show very little results and/or unable	or no ability to apply
Course Type	Lecture-ba	ased course			
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Project w	ork			24
	Reading / Self study				50
Assessment Methods and Weighting	Methods	,	Details		Veighting in fina course grade (%)
	Assignme	ents			25
	Examinat	ion			50
	Project re	ports			25
Required/recommended reading and online materials		, W. F.: Earth's Climate Past and Fut Rohli and Anthony J. Vega: Climatol			

(6 credits)	Academic Year 201			
Earth Sciences Quota				
Dr P Bach, Earth Sciences (pabach@hku.hk)				
Dr P Bach, Earth Sciences Dr P Y Tam (Tammy), Earth Sciences				
	Earth Sciences Dr P Bach, Earth Sciences (pabach@hku.hk) Dr P Bach, Earth Sciences	Earth Sciences Dr P Bach, Earth Sciences (pabach@hku.hk) Dr P Bach, Earth Sciences		

Course Objectives	The aim is to provide those students who are taking a first course in Earth Sciences with a fundamental knowledge of how our diverse and living planet Earth works with weaving together an understanding of the dynamic and interactive processes in the Earth's lithosphere, hydrosphere, biosphere and atmosphere. In addition, students should become familiar with the way the study of Earth Sciences blends observation, information, hypothesis, communication and decision making for a better understanding of the future of our planet.					
Course Contents & Topics	The course will introduce and discuss the following topics: - Introduction to Earth Systems and Habitable Planet Earth, - Lithosphere (Earth Materials, Plate Tectonics, Volcanism, Earthquakes, Surface Processes and Rock Cycle) - Hydrosphere (Surface- and Groundwater, Oceans and Water Cycle) - Atmosphere (Composition, Weather, Climate, Green House Effect, Oxygen Cycle) - Biosphere (Life, Ecosystems, Evolution and Extinction, Geochemical Cycles, - Concepts and Evolution of Dynamic Earth Systems, Human Interactions with Planet Earth Resources, Geological Hazards, Climate Change, Human Impact and Environmental Changes)					
Course Learning Outcomes	On succe	ssful completion of this coul	se, students should be able to	D :		
	2. Demon Earth Sys 3. Unders 4. Demon environme	 Understand the terminology and nomenclature appropriate to the introductory study of Earth Sciences. Demonstrate knowledge and understanding of the underlying concepts associated with the study of the Earth Systems and their dynamic interactive processes. Understand the extent and nature of global change and environmental concerns around us. Demonstrate the ability to make and record observations on Earth Systems processes in natural field environments. Develop skills to synthesize observation and knowledge in a report in essay form. 				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery of extensive knowledge / competencies/skills at an Earth Science introductory level required for attaining most or all of the course learning outcomes. Shows clear understanding of introductory terminology and concepts and strong abilities to apply and relate them in a range of complex interactive processes between Earth Systems. Demonstrates highly effective observational skills in field as well as organizational skills to present important observations made and uses them to draw appropriate and insightful conclusions with an impressive level of depth and original thoughts.				
	B Demonstrate substantial command of knowledge / competencies/skills at an Earth Science introductory level required for attaining most of the course learning outcomes. Shows evidence for understanding of introductory terminology and concepts and some abilities to apply and relate them in a range of complex interactive processes between Earth Systems. Demonstrates effective observational skills in field as well as organizational skills to present important observations made and uses them to draw appropriate and insightful conclusions with some level of depth.					
	С	Demonstrate general but incomplete command of knowledge / competencies/skills at an Earth Science introductory level required for attaining most of the course learning outcomes. Shows evidence for some understanding of introductory terminology and concepts and some abilities to apply and relate them in some interactive processes between Earth Systems. Demonstrates moderately effective observational skills in field as well as organizational skills to present observations made mostly correct but with some erroneous use and results to draw appropriate conclusions.				
	D	Demonstrate partial but limited command of knowledge / competencies/skills at an Earth Science introductory level required for attaining some of the course learning outcomes. Shows evidence of limited understanding of introductory terminology and concepts and limited abilities to apply and relate them in some interactive processes between Earth Systems. Demonstrates limited observational skills in field. Applies limited or barely effective organizational and presentational skills to present observed details and facts correctly. Limited ability to draw appropriate conclusions.				
	Fail Demonstrate little or no evidence of command of knowledge / competencies/skills at an Earth Science introductory level required for attaining the course learning outcomes. Shows little or no evidence of understanding of introductory terminology and concepts and little or no abilities to apply and relate them in interactive processes between Earth Systems. Demonstrates poor observational skills in field. Applies incoherent organizational and poor presentational skills. Ineffective presentation of observed details and facts and unable to draw appropriate conclusions.					
Course Type	Lecture w	ith laboratory component co	ourse			
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laborato				24	
	Field wor	•	2-day field camp)	16	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Examina	tion			40	
	Laborato	ry reports			20	
	Project re	eport	Field project rep	ort	30	
	Test		Quizzes		10	
Required/recommended reading and online materials		.J and Porter S.C.: The Blue and Damian N.: Earth Scie	` ,			

Offering Department	Earth Scie	nces	Quota			
Course Co-ordinator		un, Earth Sciences (minsun@hku.hk)	4404			
Teachers Involved		, Earth Sciences				
		ng, Earth Sciences				
Course Objectives	This cours	e is an introduction to fundamental principles	and concepts in geology.			
Course Contents & Topics	- Rocks an - Plate tect - Earthqua - Igneous p - Geomorp - Sediment - Folds, Fa - Metamorp - Principles - Biostratig	ults and Metamorphism				
Course Learning Outcomes	On succes	sful completion of this course, students should	d be able to:			
	 Describe Explain Describe 	 Recite the rock cycle and the rock material in the earth's crust. Describe the overall structure of the earth and the key external and internal processes. Explain the major geological phenomena in the context of plate tectonics theory. Describe the methods in geological dating. Name the major events in earth's history. 				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL	NIL				
Offer in 2014 - 2015	Y 1st s	em	Examination	Dec		
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	B C D	course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	Fail	Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture wit	h laboratory component course				
Course Teaching & Learning Activities	Activities	Detai	ls	No. of Hours		
a Learning Activities	Lectures	12 se	ssions x 2 hours	24		
	Laborator	miner	atory practical on rocks and rals, earthquakes, fossil fcation	16		
	Field work	1 field	d trip	8		
	Group wo		up project with presentation			
	Reading /	Self study		100		
Assessment Methods and Weighting	Methods	Detai	Is	Weighting in fina course grade (%)		
	Examinati	on 2-hou	ır written exam	50		
	Laborator		ical reports	25		
	Presentat	-		10		
	Project re	port		15		

EASC1403 Geological he	ritage of Hong Kong (6 credits)	Academic Year	2014

Offering Department	Earth Scie	nces		Quota	35	
Course Co-ordinator	Dr P Y Tar	n, Earth Sciences (ttpy2002@hku.hk)				
Teachers Involved		Dr P Y Tam, Earth Sciences Prof M F Zhou, Earth Sciences				
Course Objectives		To give an overview of the geology of Hong Kong, potential geological resources for tourism and the role of geology in the development of Hong Kong's infrastructure.				
Course Contents & Topics	geological	on general geology of Hong Kong, ge knowledge pertaining to large scale cons- nours) guided by experts to localities of ge	truction project plus			
Course Learning Outcomes	1. Acquire 2. Demons 3. Enhance	n successful completion of this course, students should be able to: Acquire an appreciation of the processes leading to the formation of various landforms. Demonstrate understanding of the major morphological features in Hong Kong. Enhance the observation and analytical skills, and physical ability through participation in the field excursion. Understanding the different impacts on / importance of geological heritage of Hong Kong.				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 2nd	Y 2nd sem			May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough understanding at an advanced level of extensive knowledge and skills with evidence for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking. Evidence of original thoughts, excellent field observation and ability to solve problems. Highly effective organization and presentation skills.					
	B Demonstrate substantial understanding at an advanced level of extensive knowledge and skills with evidence for attaining all the course learning outcomes. Show analytical and critical abilities and logical thinking. Evidence of original thoughts and abilities of field observation. Effective organization and presentation skills.					
	C Demonstrate general but incomplete understanding required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking. Moderately effective organization and presentation skills.					
	D Demonstrate partial but limited understanding for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail No or little knowledge about the subject. No evidence for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Very little or no ability for field observation and for solving problems. Poor organization and presentational skills.					
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures		8 sessions x 2 hor	urs	16	
	Field work		3 field trips		21	
	Group wo	rk	1 presentation and	d report	27	
	Reading /	Self study			60	
	Assessment		3 field reports		20	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	nts	attendance of 3 guided field trips	B compulsory	10	
	Essay		3 field reports		30	
	Examinati	on	2-hour written exa	mination	30	
	Presentat	on	1 group presentat	ion	15	
	Project re	port	1 group project		15	

EASC1404 Early life on ea	rth (6 credits)	Academic Year	2014		
Offering Department	Earth Sciences	Quota 50			
Course Co-ordinator	Dr K H Lemke, Earth Sciences (kono@hku.hk)				
Teachers Involved	Dr K H Lemke, Earth Sciences				
Course Objectives	This course focuses on the origins of life. It provides an overview of Earth's early environments, how life is thought to have originated on Earth, and how the Earth's dynamic environment impacted the origin of life. This course will also provide a basic overview of habitable environments on Earth and elsewhere in the Solar system.				
Course Contents & Topics	This course will cover the following topics: the composition and properties of the early Earth and Earth's first oceans; the central role of water in life; abundance of biological elements on the early Earth and elsewhere in the Solar system; possible conditions for the synthesis of life's first building blocks; the (ged chemical roots of early life on Earth and the search for life's signatures in the solar system and beyond.				
Course Learning Outcomes	On successful completion of this course, students should be able to:				

	 Explair molecules Unders Identify 	be the basic physical and chemical con an and describe the role of water and ex s. stand the role that different geological extending a sand the role that different geological extending a current origins of life topic.	treme geochemical conditions in the nvironments played during the origin	,		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	N		Examinatio	n		
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	attaining all course learning outcomes. She vidence of original thought, and the ability around "origins of life" topics, and at the	it an advanced level of extensive knowledge nows strong analytical and critical abilities to apply his/her knowledge to a wide rang same, can combine knowledge from the r Earth and elsewhere. Student shows the abi	and logical thinking, with e of problems that center natural sciences to better		
	В					
	С	C Student demonstrates general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply his/her knowledge to a range of problems in the field of the "origins of life". Student shows the ability to apply moderately effective organizational and presentational skills.				
	D	D Student demonstrates partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability understand key topics in the "origins of life" field. Student shows the ability to apply limited or barely effective organizational and presentational skills.				
	Fail	Student demonstrates little or no evidence learning outcomes. Lack of analytical and cri	of command of knowledge and skills require tical abilities, logical and coherent thinking. S cs related to the origins of life. Organization a	hows very little or no ability		
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			24		
	Laborato	ory		24		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)		
	Assignm	ents	1 midterm, group presentations, short-essay	60		
	Examina	tion	2-hour written examination	40		
Required/recommended reading and online materials	K.W. Plax	from: Mason, S.F.: Chemical Evolution cco & M. Gross: Astrobiology: A brief In r & M.A. Sephton: An Introduction to As	troduction (J. Hopkins University Pre			

EASC1405 Peaceful use of	nuclear technologies (6 credits)	Academic Year	2014
Offering Department	Earth Sciences	Quota	
Course Co-ordinator	Dr S H Li, Earth Sciences (shli@hku.hk)		
Teachers Involved	Dr S H Li, Earth Sciences		
Course Objectives	To provide students with the science backgrounds and in daily life and to invoke an awareness of current applic		
Course Contents & Topics	Man and radiation; principles of nuclear technology; c engineering, biological, physical and social sciences; ra of nuclear techniques; nuclear techniques in medical stu	adiation on earth and beyond; inc	dustrial application
Course Learning Outcomes	On successful completion of this course, students shoul 1. Recognize the science fundamentals in nuclear techn 2. Explain and describe the principles of nuclear techno 3. Have the awareness of current applications of nuclea 4. Demonstrate the knowledge and understanding of technologies.	nologies. ologies applied. ar sciences.	ated with nuclear
Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2014 - 2015	Y 1st sem	Examination	Dec
Offer in 2015 - 2016	Υ	·	

Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advance course learning outcomes. Show strong and thought, and ability to apply knowledge to a effective organizational and presentational skeeps.	lytical and critical abilities and logical thinki wide range of complex, familiar and unfan	ing, with evidence of original		
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to presentational skills.	nt and logical thinking, but with limited an	alytical and critical abilities.		
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abili knowledge to solve problems. Organization a	ties, logical and coherent thinking. Show ve	ery little or no ability to apply		
Course Type	Lecture-b	ased course				
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Field work			6		
	Group work			6		
	Project work			6		
	Reading	/ Self study		92		
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)		
	Assignm	ents	Group activities and reports	30		
	Examina	tion	2-hour	50		
	Project r	eports	Individual Report	20		
Required/recommended reading and online materials	To be ann	nounced				

EASC2401 Fluid/solid inter	actions in	earth processes (6 credits)		Academic Year	2014
Offering Department	Earth Scie	nces		Quota	
Course Co-ordinator	Dr K Lem	te, Earth Sciences (kono@hku.hk)			
Teachers Involved		te, Earth Sciences e, Earth Sciences			
Course Objectives	This cours	e provides an overview of the physical ar	nd chemical principle	es that govern Ea	rth processes
Course Contents & Topics	- Earth in - Introduc - States o - Mineral Energy e - Kinetics, - Newtoni	with approximate number of weeks the laboratory, scaling time and space (1) ion to thermodynamics, and the concept matter, phase diagrams - sublimation, colution interfaces (1) schange in Earth environments: convective reaction rates and isotope fractionation of an mechanics and basic laws of motion (1) and particle transport (1) onal, geostrophic and centripetal forces (1)	of equilibrium (2) ondensation, crystal ion, conduction and on geological time so	radiation (2)	g (2)
Course Learning Outcomes	1. Unders 2. Use ph 3. Describ 4. Demon	and basic principles of thermodynamics a ase diagrams to explain processes of fluid e how energy is exchanged throughout the strate an understanding of the kinetics of chend the principles of motion and the bearth.	as applied to the Ea d/solid interactions. ne Earth System. geochemical reactio	ons.	gases, liquids a
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E.	ASC1401 Blue planet or EASC1402 Princ	ciples of geology		
Offer in 2014 - 2015	Y 2nd	sem	I	Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advanced course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills.	cal and critical abilities and de range of complex, fan	nd logical thinking, wit	h evidence of origin

	В	the course learning outcomes. Show	a broad range of knowledge and skills requestidence of analytical and critical abilities au surfamiliar situations. Apply effective organizations	ind logical thinking, and ability to	
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.			
	D	outcomes. Show evidence of some c	nd of knowledge and skills required for atta oherent and logical thinking, but with limite ge to solve problems. Apply limited or ba	ed analytical and critical abilities.	
	Fail	outcomes. Lack of analytical and critic	command of knowledge and skills required al abilities, logical and coherent thinking. Sh ation and presentational skills are minimally o	ow very little or no ability to apply	
Course Type	Lecture v	with laboratory component course			
Course Teaching	Activitie	es	Details	No. of Hours	
& Learning Activities	Lectures		12 sessions x 2 hour	24	
	Laboratory		paper exercises	24	
	Reading	g / Self study		100	
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)	
	Assignn	nents		60	
	Examina	ation		40	
Required/recommended reading and online materials	TBA				

	(6 credits)		Academic Year	2014
Offering Department	Earth Scien	nces	Quota	
Course Co-ordinator	Dr P Bach,	Earth Sciences (pabach@hku.hk)		
Teachers Involved	Dr P Bach,	Earth Sciences		
Course Objectives		e is hands-on field and class-based that introduces and the use of geological equipment and air photograph		
Course Contents & Topics	 Interpreta outcrop pa unconformi Interpreta 	I map reading, map reference system (1 week) tion of geological maps: topographic and geological crost atterns and structural contour lines (horizontal, incline ities) (3 weeks) tion and use of air photographs (1 week) al field techniques and equipment, field observation and	d strata, folded, an	d faulted strata
Course Learning Outcomes	On succes	sful completion of this course, students should be able to:		
	 Construct Demons Create a and data. 	ological maps and comprehend 3-D geological structures of a geological cross section showing interpreted subsurfat trate techniques for basic field observations, measurement and interpret an internally consistent geological map from o skills in integrating geological field data in determining field report.	nce rocks and structu nts and identifications n a set of collected	res. s. field observation
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EA	SC1401 Blue planet or EASC1402 Principles of geology		
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec
Offer in 2015 - 2016	Υ			
One: III 2013 - 2010				
	A+ to F			
Course Grade	A+ to F	Demonstrate thorough and complete grasp of the subject in order t strong ability to record observations on earth processes in the field ar situations. Evidence of strong independent analytical, critical and log all observations made and knowledge in a field report and geological presentational skills.	nd to apply knowledge to fical thinking. Show strong	amiliar and unfamilia ability to synthesiz
Course Grade		strong ability to record observations on earth processes in the field ar situations. Evidence of strong independent analytical, critical and log all observations made and knowledge in a field report and geological	nd to apply knowledge to fical thinking. Show strong al map with highly effective learning outcome. Shows knowledge to familiar all thinking. Shows ability	amiliar and unfamilia g ability to synthesiz re organizational and sevidence of ability to and some unfamilia ty to synthesize al
Course Grade Grade Descriptors	A	strong ability to record observations on earth processes in the field ar situations. Evidence of strong independent analytical, critical and log all observations made and knowledge in a field report and geological presentational skills. Demonstrate substantial grasp of the subject required for most of the record observations on earth processes in the field and to apply situations. Evidence of independent analytical, critical and logic observations made and knowledge in a field report and geolog	nd to apply knowledge to ficial thinking. Show strong all map with highly effective learning outcome. Shows knowledge to familiar all thinking. Shows all thinking. Shows all thinking is the strong of the learning of material and apply knowledge to mot apply knowledge to mot. Show ability to synthesis	amiliar and unfamilia g ability to synthesize we organizational and evidence of ability to and some unfamiliar ty to synthesize all organizational and putcome. Evidence o post familiar situations ze most observation:

		Evidence of some coherent and logical thinkin synthesize some observations made and kn organizational and presentational skills.		
	Fail	Demonstrate little or no grasp of the subject re to record observations on earth processes in problems. Evidence of little or lack of analytica no ability to synthesize observations made a organizational and poor presentational skills.	the field and show very little or no ability t I and critical abilities, coherent and logical	o apply knowledge to solve thinking. Shows very little or
Course Type	Field car	nps		
Course Teaching	Activitie	9\$	Details	No. of Hours
& Learning Activities	Lecture	3	12 sessions x 1 hour	12
	Field work		5-day field camp & 2 day trips	56
	Laboratory work		12 hours paper exercises	12
	Reading / Self study			100
Assessment Methods and Weighting	Method	S	Details	Weighting in final course grade (%)
	Assignn	ents	Lab Assignments	10
	Report		Field Work Assessment	70
	Test			20
Required/recommended reading and online materials		ensive Course Notes provided. nes: Basic Geological Mapping (Wiley, 1	995, 3rd edition)	

	atmospher	re and hydrosphere (6 credits)	Academic Year	2014
Offering Department	Earth Scie	nces	Quota	50
Course Co-ordinator	Dr J R Ali,	Earth Sciences (jrali@hku.hk)		
Feachers Involved		Earth Sciences , Earth Sciences		
Course Objectives		e introduces the atmosphere and hydrosphere systems th one another.	, and explains at a bas	sic level how the
Course Contents & Topics	Geological Seawater Atmospher Hydrologic Systems; contamina	on and course plan, Earth within a broader context (\$1 forces shaping the floor of the Oceans and Seas; Composition/Chemistry; Introduction to the Atmospre; Temperature; Moisture and Atmospheric Stability; Feal Cycle - an overview; Air Pressure and Winds; Intro to Ocean Circulation; Waves; Tides; Coasts; Groundtion, caves and karst; Glaciers and glacial landscapes; ange; Effects of climate change.	Water Structure, Ocea ohere; Heating Earth orms of condensation to Atmospheric Circula dwater basics; Groul	an Structure and surface and precipitation and Weather usage.
Course Learning Outcomes	1. Unders System, pa 2. Apprecia location ar	esful completion of this course, students should be able to tand the important features which distinguish Earth frarticularly with regards to its outer fluid envelopes. ate that on a geological timescale, the ocean basins and morphology, and why this is the case. tand the key features of water, and the critical role there system.	rom the other planets	ally changing the
	their impor	and the basic physical phenomena associated with the tant lower-order elements. n awareness of the scientifically "hot" Atmosphere and H	·	Oceans/Seas an
and Co-requisites and	their impor 5. Have ar	tand the basic physical phenomena associated with the trant lower-order elements.	ydrosphere topics.	Oceans/Seas an
and Co-requisites and mpermissible combination)	their impor 5. Have ar Pass in EA	tand the basic physical phenomena associated with the stant lower-order elements. In awareness of the scientifically "hot" Atmosphere and H	ydrosphere topics.	Dec
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	their impor 5. Have ar Pass in EA	tand the basic physical phenomena associated with the trant lower-order elements. In awareness of the scientifically "hot" Atmosphere and Hypas ASC1401 Blue planet or EASC1402 Principles of geology	ydrosphere topics.	
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	their impor 5. Have ar Pass in EA	tand the basic physical phenomena associated with the trant lower-order elements. In awareness of the scientifically "hot" Atmosphere and Hypas ASC1401 Blue planet or EASC1402 Principles of geology	ydrosphere topics.	
Pre-requisites (and Co-requisites and (Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	their impor 5. Have ar Pass in EA Y 1st s Y A+ to F	tand the basic physical phenomena associated with the retant lower-order elements. In awareness of the scientifically "hot" Atmosphere and Hyasc1401 Blue planet or EASC1402 Principles of geology sem Thorough grasp of the subject; evidence of strong critical abilities a and presentational skills; insightful use and critical analysis / evalua quality sources and to quote/reference aptly; integration of the full reand techniques.	ydrosphere topics. y Examination and logical thinking; highly effition of information drawn from the angle of appropriate theories	Dec fective organizationa m a full range of hig , principles, evidence
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	their impor 5. Have ar Pass in EA Y 1st: Y A+ to F	tand the basic physical phenomena associated with the rtant lower-order elements. In awareness of the scientifically "hot" Atmosphere and Hysical Scientifically "hot" Atmosphere and Hysical Scientifical Principles of geology Sem Thorough grasp of the subject; evidence of strong critical abilities a and presentational skills; insightful use and critical analysis / evalua quality sources and to quote/reference aptly; integration of the full re-	ydrosphere topics. y Examination and logical thinking; highly efficient of information drawn from the information drawn from t	Dec fective organizations m a full range of hig principles, evidence organizational and make meaningful
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	their impor 5. Have ar Pass in EA Y 1st s Y A+ to F	tand the basic physical phenomena associated with the retant lower-order elements. In awareness of the scientifically "hot" Atmosphere and Hyasc1401 Blue planet or EASC1402 Principles of geology sem Thorough grasp of the subject; evidence of strong critical abilities a and presentational skills; insightful use and critical analysis / evalua quality sources and to quote/reference aptly; integration of the full read techniques. Substantial grasp of the subject; evidence of critical abilities are presentational skills; critical use of relevant information from comparisons between different secondary interpretations and to	Examination Examination Examination and logical thinking; highly effective ange of appropriate theories and logical thinking; effective sources, showing ability to quote/reference aptly; ge critical abilities and logical afformation from sources, sho	Dec fective organizations m a full range of hig, principles, evidence organizational and make meaningfuneral integration of thinking; moderatelywing ability to make

	Fail	Little or no grasp of the knowledge and unders logical / coherent thinking; incoherent organizati and no critical comparison of them; little or no or	ion and poor presentational skills; limited	use of secondary sources
Course Type	Lecture w	ith laboratory component course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
a Learning Activities	Lectures			24
	Laborato	ry i	ncluding tutorials & discussion	24
	Project v	ork		10
	Reading / Self study			90
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignm	ents		20
	Essay			25
	Examination			50
	Presenta	tion		5
Required/recommended reading and online materials		arrison: Oceanography: An Invitation to M K. Lutgens and Edward J. Tarbuck: The <i>I</i>		eteorology

	(6 credits)		Academic Year	2014
Offering Department	Earth Scie	nces	Quota	
Course Co-ordinator	Dr S H Li,	Earth Sciences (shli@hku.hk)		
Teachers Involved	Dr S H Li,	Earth Sciences		
Course Objectives		e provides an understanding of the fundamentals and ap students to the basic chemical principles, modern tec le earth.		
Course Contents & Topics	- Differenti - Aqueous - Trace ele - Chemistr - Chemica - Radioact - Stable is - Oxidatior - Atmosph	and chemical state of the earth, ation of and cosmic abundance of elements, solutions and chemistry of natural water, ment, y of igneous rocks, controls on soil formation, ve isotope geochemistry, tope geochemistry, and reduction, eric chemistry, weathering		
Course Learning Outcomes	 Demons studies. Describe Apply th 	strate an understanding of basic principles of geochemis e element distribution in major rocks. e principles of isotopes to dating and studies of petrogen	try and their applicat	
	4. Demons	strate knowledge of the chemical weathering processes.		
(and Co-requisites and		strate knowledge of the chemical weathering processes. SC1402 Principles of geology		
(and Co-requisites and Impermissible combination)		SC1402 Principles of geology	Examination	Dec
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Pass in EA	SC1402 Principles of geology		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Pass in EA	SC1402 Principles of geology		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in EA	SC1402 Principles of geology	Examination I required for attaining all hinking, and ability to appid results to draw appro	Dec the course learning by highly effective lab
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Pass in EA Y 1st: Y A+ to F	SC1402 Principles of geology Sem Demonstrate extensive knowledge and skills at an advanced level outcomes. Show strong analytical and critical abilities and logical the skills and techniques to solve problems. Critical use of data and strong analytical and critical use of data and skills and techniques to solve problems.	Examination I required for attaining all inking, and ability to appid results to draw approskills. and skills required for attaical abilities and logical the second state of the second	Dec I the course learning ly highly effective lab priate and insightful ining at least most of hinking, and ability to
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in EA Y 1st: Y A+ to F	Demonstrate extensive knowledge and skills at an advanced level outcomes. Show strong analytical and critical abilities and logical the skills and techniques to solve problems. Critical use of data an conclusions. Apply highly effective organizational and presentational: Demonstrate substantial command of a broad range of knowledge at the course learning outcomes. Show evidence of analytical and critical use of analytical and critical course learning outcomes. Show evidence of analytical and critical polytical and critical polytical course learning outcomes. Show evidence of analytical course learning outcomes. Show evidence of salety the course learning outcomes.	Examination I required for attaining all inking, and ability to app id results to draw approskills. and skills required for attaining to tuse of data of results to tuse of data of results to the control of the cont	Dec the course learning by highly effective lab priate and insightful ining at least most of hinking, and ability to to draw appropriate g most of the course g, and ability to apply leous use of data and
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y 1st: Y A+ to F B	Demonstrate extensive knowledge and skills at an advanced level outcomes. Show strong analytical and critical abilities and logical the skills and techniques to solve problems. Critical use of data an conclusions. Apply highly effective organizational and presentational. Demonstrate substantial command of a broad range of knowledge at the course learning outcomes. Show evidence of analytical and criticapply effective lab skills and techniques to solve problems. Correconclusions. Apply effective organizational and presentational skills. Demonstrate general but incomplete command of knowledge and selearning outcomes. Show evidence of some analytical and critical a moderately effective lab skills and techniques to solve problems. Mos	Examination I required for attaining all pinking, and ability to appid results to draw approskills. and skills required for attaining bilities and logical thict use of data of results to use of data of results skills required for attaining bilities and logical thinking stly correct but some error reganizational and presente quired for attaining some the with limited analytical and solve problems. Limited a solve problems. Limited and presented to the state of the sta	Dec I the course learning ly highly effective lab priate and insightful ining at least most of ninking, and ability to to draw appropriate g most of the course g, and ability to apply leous use of data and ational skills. of the course learning d critical abilities, and bility to use data and tollity to use data and tollity to use data and tollity to use data and bility to use data and

Course Type	Lecture with laboratory component	Lecture with laboratory component course					
Course Teaching & Learning Activities	Activities	Details	No. of Hours				
& Learning Activities	Lectures	12 sessions x 2 hours	24				
	Laboratory paper exercises		24				
	Tutorials		6				
	Reading / Self study		100				
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)				
	Assignments		40				
	Examination		60				
Required/recommended reading and online materials	Krauskopf K.B. and Bird D.K. Introd	of Geochemistry (Prentice Hall, 1998, 2nd eduction to Geochemistry (McGraw-Hill, Inc. 19 emistry (Jones and Bartlett Publishers 2005)					

	credits)					Academic Year	2014
Offering Department	Earth Sci	ciences				Quota	30
Course Co-ordinator	Prof M S	Sun, Eart	Sciences (minsu	un @hku.hk)			
Teachers Involved	Prof M So Dr Y Li, E	,	Sciences ences				
Course Objectives					familiarize student and metamorphic r	s with common mine ocks.	rals that are bas
Course Contents & Topics	- Mineral - Physica - Mineral - Identific - Use of r - Optical - Optical - Optical - Identific - Preciou - Chemic - Trace e	I symme al proper I compose cation of petrogral properti properti cation of us mineral variate elements	zation, mineral ch ry, Miller indices ies of minerals ition, structure an rock forming mine ohic microscope as under plane po as under orthosco as under conosco rock forming mine als ons of minerals	d classification erals-hand spec larized light pic illumination pic illumination	cimens		
Course Learning Outcomes	1. Descri 2. Apply structure. 3. Descri 4. Identify	ibe the r the physe. ibe the p fy the co	ethods and syste ical and chemical rinciple of optical	ms used in cla properties use mineralogy. g minerals in h	and specimens and	als. of rock-forming miner	alogy and miner
Pre-requisites and Co-requisites and mpermissible combination)	Pass in E	EASC14	2 Principles of ge	eology			
	V 1st sam Evamination Dec						
Offer in 2014 - 2015	Y 1s	st sem				Examination	Dec
	Y 1s	st sem				Examination	Dec
Offer in 2015 - 2016		st sem				Examination	Dec
Offer in 2015 - 2016 Course Grade	Y	Demo outco skills	nes. Show strong an and techniques to s	alytical and critica solve problems. C	abilities and logical th	required for attaining all inking, and ability to appid results to draw appro	the course learning
Offer in 2015 - 2016 Course Grade	Y A+ to F	Demo outco skills concl Demo the c	nes. Show strong an and techniques to s isions. Apply highly ef instrate substantial co- iurse learning outcom- effective lab skills ai	alytical and critical solve problems. Confective organization or a broad less. Show evidence to techniques to	abilities and logical the ritical use of data annal and presentational so I range of knowledge as e of analytical and crit	required for attaining all inking, and ability to appid results to draw appro	the course learning y highly effective la priate and insightfu ining at least most chinking, and ability to
Offer in 2015 - 2016 Course Grade	Y A+ to F	Demoutcc skills concl Demothe c apply concl Demmeter mode	nes. Show strong an and techniques to sisions. Apply highly effective learning outcom effective lab skills a lisions. Apply effective nstrate general but in go outcomes. Show e ately effective lab skill sails and the strategeneral but in the strategy effective lab skill but in the strategy effective	alytical and critical colve problems. Gretive organization mmand of a broad less. Show evidence the condition of techniques to organizational accomplete command the command of techniques of some is list and techniques.	abilities and logical thritical use of data an nal and presentational state of the control of t	required for attaining all inking, and ability to app d results to draw appro skills. and skills required for atta ical abilities and logical th	the course learnin y highly effective la priate and insightfu- ining at least most of hinking, and ability to draw appropriat g most of the cours g, and ability to applie eous use of data an
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F A B	Demoutcc skills concl Demoute apply concl Demoute result Demoute learn mode result	mes. Show strong an and techniques to sisions. Apply highly effective lab skills an issions. Apply effective lab skills an issions. Apply effective lab skills and issions. Apply effective lab skills and issions. Show exately effective lab skills to draw appropriate enstrate partial but limines. Show evidence if ability to apply partial ability to apply partial and issions.	alytical and critica olive problems. C fective organizatio mmand of a broaches. Show evidence to organizational and organizational and necomplete comma evidence of some of lls and techniques conclusions. Apply ted command of k of some coherent ally effective lab si	abilities and logical thritical use of data an anal and presentational strategies of an analytical and critical and critical and critical and critical and critical and of knowledge and strategies of an analytical and critical alto solve problems. Mos moderately effective or mowledge and skills recand logical thinking, but title and techniques to solve problems and logical thinking, but title and techniques to solve problems and logical thinking, but title and techniques to solve problems.	required for attaining all inking, and ability to appid results to draw approskills. Ind skills required for attaical abilities and logical text use of data of results is the skills required for attaining bilities and logical thinking tty correct but some error	the course learning y highly effective lal priate and insightfu ining at least most of inking, and ability to draw appropriate g most of the course, and ability to apple eous use of data an
Offer in 2015 - 2016 Course Grade	Y A+ to F A B	Demmoutce skills concil Demmothe c apply concil Demmoderesult Demmoderesult Demmoutce limite result Demoutce offect	nes. Show strong an and techniques to sisions. Apply highly effective lab skills an issions. Apply effective lab skills an issions. Apply effective lab skills and issions. Apply effective lab skills and issions. Show exately effective lab skills and issonant and issions. Show exately effective lab skills are to draw appropriate in the proposition of the	alytical and critica colve problems. C fective organization mmand of a broad es. Show evidence organizational and complete command vidence of some ills and techniques too some coherent ally effective lab side conclusions. Apply idence of command did some coherent ally effective lab side conclusions. Apply idence of command all and critical als kills and technique.	abilities and logical thritical use of data an anal and presentational at range of knowledge at e of analytical and critsolve problems. Correct of presentational skills. In display, the control of the	required for attaining all inking, and ability to appld results to draw approskills. Ind skills required for attaical abilities and logical to use of data of results inkills required for attaining the correct but some error ganizational and presenta with limited analytical an solve problems. Limited a solve problems. Limited	the course learning y highly effective lal priate and insightfur ining at least most of inking, and ability to draw appropriate groups and ability to applieous use of data and and and tional skills. In the course learning deritical abilities, and ability to use data and sentational skills.
Offer in 2015 - 2016 Course Grade	Y A+ to F A B C D	Demoutcc skills concl Demmetre capply concl Demmetre capply concl Demmetre capply concl Demoutcc limite result Demoutcc limite result	nes. Show strong an and techniques to sisions. Apply highly effective lab skills an issions. Apply effective lab skills an issions. Apply effective lab skills and issions. Apply effective lab skills and issions. Show exately effective lab skills and issonant and issions. Show exately effective lab skills are to draw appropriate in the proposition of the	alytical and critical colve problems. Fective organization mmand of a broad less. Show evidence of command techniques to organizational and complete command techniques conclusions. Apply ted command of k of some coherent a land critical abdivible and critical and critical abdivible and critical abdivible and critical abdivible and critical abdivible and present and critical	abilities and logical thritical use of data an anal and presentational at range of knowledge at e of analytical and critsolve problems. Correct of presentational skills. In display, the control of the	required for attaining all inking, and ability to appid results to draw approskills. Ind skills required for attaining all to the control of	the course learning highly effective lapriate and insightfur ining at least most of inking, and ability to draw appropriate groups and ability to apple to the course learning of the course learning deritical abilities, and ability to use data and sentational skills. If the course learning the course learning apply minimally and/or unable to drawn and course learning to apply minimally and/or unable to drawn.

& Learning Activities	Activities	Details	No. of Hours
	Lectures	12 sessions x 2 hours	24
	Laboratory	12 sessions x 2 hours	24
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		50
	Examination		50
Required/recommended reading and online materials	C. Klein and C.S. Hurlbat: Manual o W.D. Nesse: Introduction to Optical	f Mineralogy (Wiley, 1999, 1st ed.) Mineralogy (Oxford University Press, 1998,	2nd ed).

EASC2408 Planetary geo	logy (6 cred	lits)		Academic Year	2014	
Offering Department	Earth Scient	ences		Quota		
Course Co-ordinator	Dr M H Le	ee, Earth Sciences (mhlee@hku.hk)				
Teachers Involved	Dr M H Le	ee, Earth Sciences				
Course Objectives	distributio and rings point of v remote s	This course provides students with an introduction to the origin, evolution, structure, composition and distribution of matter in the Solar System condensed in the form of planets, satellites, comets, asteroids and rings, with particular emphasis on surface features, internal structures and histories from a geological point of view. The course incorporates the findings from recent space investigations, planetary imagery, remote sensing and Earth analogues to extraterrestrial features into a fascinating portrayal of the geological activities and histories in our Solar System.				
Course Contents & Topics	Mercury, Neptune	n, evolution, internal structure and s Venus, the Earth-Moon system, a and their moons; Pluto, Charon and gin of our Solar System.	and Mars; the giant pla	anets Jupiter, Satu	ırn, Uranus, and	
Course Learning Outcomes	1. Describ 2. Explain 3. Demor governing	On successful completion of this course, students should be able to: 1. Describe the basic features of our Solar System and its constituents. 2. Explain how this knowledge is acquired through observations and experiments. 3. Demonstrate knowledge and understanding of the key geological, physical and chemical processes governing the structure, formation and evolution of planetary bodies. 4. Compare and contrast our own planet Earth with other planetary bodies.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E	ASC1401 Blue planet or EASC1402	Principles of geology or	PHYS1650 Nature	of the universe	
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	В	Demonstrate thorough mastery of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to				
	С	learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply				
	D	knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures		12 sessions x 2 hou	urs	24	
& Learning Activities			12 sessions x 2 hou		24	
& Learning Activities	Laborato	ry	12 303310113 X 2 1101			
& Learning Activities		ry / Self study	12 363310113 X 2 1100	uio	100	
Assessment Methods		/ Self study	Details	V	Veighting in fina	
Assessment Methods	Reading	/ Self study		V	Veighting in final course grade (%)	
Assessment Methods and Weighting	Reading	/ Self study		V	100 Veighting in final course grade (%) 20 50	

	Test		15
Required/recommended reading and online materials	N. McBride and I. Gilmour: An Introduction to the	Solar System (Cambridge University	/ Press, 2004)

EASC2409 Regional field	studies (6 d	realts)		Academic Year	2014
Offering Department	Earth Scie	ences		Quota	25
Course Co-ordinator	Dr J Ali, E	arth Sciences (jrali@hku.hk)			
Teachers Involved	Prof M Su	arth Sciences n, Earth Sciences lang, Earth Sciences			
Course Objectives	Kong thro	se is field-based and introduces gugh hands on studies and field exe will be compulsory for majors in	cursions.	-	the vicinity of Hong
Course Contents & Topics	The cours	e will introduce the following topic	CS:		
	GeologicRecognitField recStratigraField gecEngineerManager	I studies in Southern China and/oral history of S. China & Taiwan clion of rock units and minerals in ognition and description of geological measurements ology of active and passive marging geology ment of geological hazards ological mapping techniques	the field gical structures		
Course Learning Outcomes	 have acc be able and miner have acc develop 	course experience the students all quired a broad understanding of to undertake basic field observations. Quired at least 3 days of experient skills in integrating geological field report.	he geology of east Asia, ations, stratigraphic mea ce in independent stratig	surements and ide	ntifications of rocks geological mapping
Pre-requisites and Co-requisites and mpermissible combination)		ASC1401 Blue Planet or EASC14 f course coordinator	102 Principles of Geology	and and	
Offer in 2014 - 2015	Y 1st	sem		Examination	No Exam
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate an advanced level of understanding of the geology of the study sites, ability to give a detailed account of the geological history of the study region, as well as strong ability to produce good-quality reports on independent field measurements.				
	B Demonstrate a satisfactory understanding of the geology of the study sites with evidence on efforts to unravel the geological history of the study region and acceptable level of competence in field measurement techniques.				
	Could only demonstrate an incomplete understanding of the geology of the study sites and some ability to make field observations and a basic knowledge on field measurement techniques.				
	D Demonstrate limited understanding of the geology of the study sites and limited ability to apply field measurement techniques.				
	Fail Show no or little knowledge of the geology of the study sites and lack of ability in making field observations and applying field measurement techniques.				
Course Type	Field cam	ps			
Course Teaching	Activities	S	Details		No. of Hours
& Learning Activities	Field wor		15 days		100
	Reading	/ Self study			20
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%
	Report				100
Required/recommended reading	Comprehe	ensive course notes provided			

EASC3020 Global chang	Academic Year	2014			
Offering Department	Earth Sciences	Quota			
Course Co-ordinator	Dr Z H Liu, Earth Sciences (zhliu@hku.hk)				
Teachers Involved	Dr Z H Liu, Earth Sciences				
Course Objectives	This course will explore the role of humans in global change and the environmental responses to such changes. Causes and impacts of climate change will be discussed.				

Course Contents & Topic	evolution	Global warming, greenhouse gas emission, past climates, climatic and environmental changes vs. culture evolution, natural vs. anthropogenic climate change, model projections of future climate change, scientific uncertainty, impacts of climate change, including sea level, fresh water, food, ecosystems and human health				
Course Learning Outcomes	1. Recog 2. Recog 3. Identify	On successful completion of this course, students should be able to: 1. Recognise the complexity of global climate systems. 2. Recognise the controversy of anthropogenic global warming. 3. Identify modern environmental issues. 4. Assess the credibility of various scientific arguments.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E course	EASC2404 Introduction to atmosphere and	d hydrosphere or ENVS2001 Enviro	nmental field and lab		
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced course learning outcomes. Show strong analyti thought, and ability to apply knowledge to a wide use of data and results to draw appropriate a evaluation of information drawn from a full range	cal and critical abilities and logical thinking, range of complex, familiar and unfamiliar situa and insightful conclusions. Show insightful us	with evidence of original tions. Demonstrate critical se and critical analysis /		
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate correct use of data and results to draw appropriate conclusions. Show critical use of relevant information from sources and ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Demonstrate mostly correct but some erroneous use of data and results to draw appropriate conclusions. Show use of relevant information from sources and ability to make comparisons between different interpretations and to quote/reference aptly.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Demonstrate limited ability to use data and results to draw appropriate conclusions. Show use and reference of several sources, but mainly through summary rather than analysis and comparison.				
	Fail					
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	es .	Details	No. of Hours		
& Learning Activities	Lectures	:		36		
	Project v	vork		30		
	Tutorials			12		
	Discussi	on		24		
	Reading	/ Self study		48		
Assessment Methods and Weighting	Method	<u> </u>	Details	Weighting in final course grade (%)		
	Essay		Coursework Assessment	25		
	Examina	ition	One 2-hour written examination	50		
	Project r	eport		25		

EASC3402 Petrology (6 cr	edits)	Academic Year	2014		
Offering Department	Earth Sciences	Quota			
Course Co-ordinator	Prof G Zhao, Earth Sciences (gzhao@hku.hk)				
Teachers Involved	Prof G Zhao, Earth Sciences Prof M Sun, Earth Sciences Dr M Pittman, Earth Sciences				
Course Objectives	To give students an understanding of the features in sedimentar as the ability to identify major rock types and their textures an under microscope.				
Course Contents & Topics	 - Magma and magmatism; textures and structures of igneous rocks, classification of igneous rocks, including volcanism and plutonism - Basic igneous rocks - Intermediate igneous rocks - Acid igneous rocks - Sedimentary diagenesis, classification of sedimentary rocks; textures and structures of sedimentary rocks. - Clastic sedimentary rocks: conglomerate and sandstone, siltstone and mudstone - Biochemical sedimentary rocks: limestone and dolostone - Metamorphism; controlling factors of metamorphism; textures and structures of metamorphic rocks; 				

	Meta-peliMeta-bas					
Course Learning Outcomes	Identify microscope Identify microscope Identify microscope Identify microscope	major sedimentary rocks and their teals. major metamorphic rocks and their teals.	res and structures in ktures and structures xtures and structures	in both hand sp	pecimens and under	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EA	SC2407 Mineralogy				
Offer in 2014 - 2015	Y 2nd	sem	E	Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems.				
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems.				
Course Type	Lecture wit	h laboratory component course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures		12 sessions x 2 hou	rs	24	
	Laboratory		specimen descripti section observation microscope		24	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	nts			50	
	Examinati	on			50	
Required/recommended reading and online materials	Harvey Bla	tt and Robert J. Tracy, Petrology (Sec	ond Edition; W.H. Fre	man and Comp	any, New York)	

nments (6 credits)	Academic Year	2014			
rth Sciences	Quota				
Dr S C Chang, Earth Sciences (suchin@hku.hk)					
S C Chang, Earth Sciences J King, Earth Sciences					
is course discusses the origin, diagenesis, classification and east. Students will learn features and processes of sedimentary gocesses.					
Overview of sedimentary geology hysics of erosion, transportation and sedimentation edimentary structures lepositional environments (non-marine) lepositional environments (marine) equence stratigraphy asin analysis ledimentary environment around Hong Kong edimentary environment on Mars					
successful completion of this course, students should be able to: Describe the nature and significance of sedimentary features and Identify carbonate and siliciclastic rocks in hand sample. Describe the facies in a depositional environment.					
lden	tify carbonate and siliciclastic rocks in hand sample.	cribe the facies in a depositional environment.			

		4. Undertake detailed study of a stratigraphic section in the field.5. Conduct basic observations and interpretations from outcrops.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E	Pass in EASC2402 Field methods or EASC3402 Petrology				
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May		
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A		t. Show strong analytical abilities and logical ieldwork skills and techniques. Apply highly e			
	В		ect. Show strong analytical abilities and logic ghly effective organizational and presentational			
	С		of the subject. Show some analytical abilities techniques. Apply moderately effective organi			
	D	Demonstrate partial but limited grasp of the subject. Show some analytical abilities and logical thinking. Apply partially effective lab/fieldwork skills and techniques. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no grasp of the subject. Evidence of little or lack of analytical abilities and logical thinking. Apply minimally effective lab/fieldwork skills and techniques. Organization and presentational skills are ineffective.				
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures		12 sessions x 2 hours	24		
	Laborato	ry	6 sessionsx 2 hours	12		
	Field work		1 day trip with field project	8		
	Project work		Examples for sedimentary environments	12		
	Reading	/ Self study		90		
Assessment Methods and Weighting	Methods	.	Details	Weighting in final course grade (%)		
	Examina	tion		40		
	Laborato	ry reports		20		
	Presenta	tion		10		
	Test		Mid-term examination	30		
Required/recommended reading and online materials	Sediment	ology and Stratigraphy (Second Edition	n), Gary Nichols			

EASC3404 Structural geolo	ogy (6 credits)	Academic Year	2014			
Offering Department	Earth Sciences	1				
Course Co-ordinator	Dr J R Ali, Earth Sciences (jrali@hku.hk)					
Teachers Involved	Dr J R Ali, Earth Sciences					
Course Objectives	The course covers the mechanical properties of rocks and how and why rocks deform, geological maps and their use in interpreting structure.					
Course Contents & Topics	- Stress, strain, stress-strain relation, Mohr circle techniques; - Strain types; - Stereonets; - Faults: strike-slip faults, dip-slip faults and thrusts; - Joints; - Extensional structures, listric faults; - Folds; Satellite folds; - Shear Zones; - Fabrics (foliations, lineations); - Pressure solution cleavages; - Microscopic deformation, Dislocations; - Structurally focused map interpretation; - Key Structures in HK.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand a moderate level rock deformation. 2. Interpret structural data from a geology map. 3. Plot and interpret structural data on a stereonet. 4. Appreciate 3D rock and 4D rock-time relationships.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EASC2402 Field methods and EASC3402 Petrology					

Offer in 2014 - 2015	Y 1s	t sem	Examination	Dec		
Offer in 2015 - 2016	Υ		·			
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A Thorough grasp of the subject; evidence of strong critical abilities and logical thinking; apply knowledge to a wide range of complex, familiar and unfamiliar situations; highly effective fieldwork skills and techniques; critical use of data and results to draw appropriate and insightful conclusions; integration of the full range of appropriate theories, principles, evidence and techniques.					
	B Substantial grasp of the subject; evidence of critical abilities and logical thinking; apply knowledge to familiar and some unfamiliar situations; effective fieldwork skills and techniques; correct use of data and results to draw appropriate conclusions; general integration of theories, principles, evidence and techniques.					
	General but incomplete grasp of the subject; evidence of some critical abilities and logical thinking; apply knowledge to most familiar situations; moderately effective fieldwork skills and techniques; mostly correct but some erroneous use of data and results to draw appropriate conclusions; some partial integration of theories, principles, evidence and techniques.					
	D	·				
	Fail	Little or no grasp of the knowledge and under coherent thinking; very little or no ability to ap fieldwork skills and techniques; misuse of data or inapt integration of theories, principles, evide	oply knowledge to solve problems; minimal and results and/or unable to draw appropria	ly effective or ineffective		
Course Type	Lecture v	vith laboratory component course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures		eleven 2-hour sessions	22		
	Laborato	nrv	stereonets, map interpretation with a structural focus	22		
	Field wo	rk	3 days field work	24		
	Project v	work	additional 1-2 days self directed 'field' studies of facing stones showing interesting structural features	20		
	Reading / Self study 50					
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignm	nents		50		
	Examination			50		
Required/recommended reading and online materials		Park, R. G.: Foundations of Structural Geology (Blackie, 1989) Davies and Reynolds 1996; Ben A. van der Pluijm & Stephen Marshak. 2004.				
Additional Course Information		I geology has lots of associated textbook	s and web hosted materials, so the	three named works		

EASC3405 Environmental	remote sensing (6 credits)	Academic Year	2014			
Offering Department	Earth Sciences	25				
Course Co-ordinator	Prof Y Zong, Earth Sciences (yqzong@hku.hk)					
Teachers Involved	TBC, Earth Sciences TBC, Earth Sciences					
Course Objectives	This course provides an introduction to the methods and applifrom a distance with instruments carried by satellites or aircraft, and atmosphere for inferring the nature and characteristics atmosphere and for solving environmental problems.	the spectral features of th	e earth's surface			
Course Contents & Topics	Basic princioles of remotesensing Key remote sensing platforms, sensers and their purposes Image procesing, analysis, evaluation and interpretation Integration with environmental geographic information systems Applications of remote sensing for environmental management	2. Key remote sensing platforms, sensers and their purposes3. Image procesing, analysis, evaluation and interpretation4. Integration with environmental geographic information systems				
Course Learning Outcomes	On successful completion of this course, students should be able 1. demonstrate knowledge of how remotely sensed data are acq 2. comprehend the basic techniques of image processing 3. handle remotely sensed data within geographic information sy 4. understand how remotely sensed be used for environmental a 5. evaluate and interpret remotely sensed data, and 6. present and discuss results.	uired, stems				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL2306 Ecology and evolution or EASC2404 Introdu ENVS2001 Environmental field and lab course or ENVS2002 En					
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ					

Course Grade	A+ to F					
Grade Descriptors	A	Excellent, well organised structure appropriate to report. Clear and consistent organisation. All sections clearly written and laid out, very clear and precise summary and conclusions. Appropriate use of clear, well chosen very good graphs, diagrams, figures, tables and maps. Results critically assessed and discussion well organised and supported by wide background reading.				
	В	B Well organised, appropriate structure. Well written, clear summary and conclusions. Good use of appropriate graphs, diagrams, figures, tables and maps. Good analysis and interpretation of results, supported by some background reading.				
	С	Adequate structure. Presentation and writing is satisfactory, summary and/or conclusions lack sharpness. Satisfactory use of appropriate graphs, diagrams, figures, tables and maps. Competent, straightforward analysis and discussion of results.				
	D	Basic organisation, lacks clarity of thought. Adequate presentation, style of writing makes some parts difficult to follow. Summary and conclusions rather basic. Limited use of often poorly selected and executed graphs, diagrams, figures, tables and maps. Limited analysis and discussion of results, possibly some misunderstanding of the data.				
	Fail	Poor organisation, lacking coherence. Poor inappropriate and poorly executed graphs, or misinterpretation of the results. Discussion	diagrams, figures, tables and maps. Litt			
Course Type	Lecture	with laboratory component course				
Course Teaching & Learning Activities	Activiti	ies	Details	No. of Hours		
a Learning Activities	Lecture	es		18		
	Labora	tory		12		
	Project	work		12		
	Discuss	sion		6		
	Readin	eading / Self study		100		
Assessment Methods and Weighting	Method	ds	Details	Weighting in final course grade (%)		
	Presen	tation	Project presentation	10		
	Project	report	Individual project report	90		
Required/recommended reading and online materials	Comput	Sensing and Image Interpretation [6th er processing of remotely sensed imagmental remote sensing and system ana	es: an introduction, Mather and K			
Additional Course Information	n Due to t	he restriction of lab space, places				

EASC3406 Reconstruction	of past cli	mate (6 credits)	Academ	ic Year	2014	
Offering Department	Earth Scie	•	Quota			
Course Co-ordinator	Dr S H Li,	Earth Sciences (shli@hku.hk)				
Teachers Involved		Earth Sciences an, Earth Sciences				
Course Objectives		This course provides students with an understanding of how dynamic earth is and how it has changed over the last 2.6 million years. This course introduces the theory and methods of climate reconstructions.				
Course Contents & Topics	Ice sheet in Driven force Quantitative Pollen and Climate che Quaternam Sea-level a Climate che Climate che Climate che Climate che Climate che Driven force provided the prov	rnary period (1), n north hemisphere(1), ses of climate change (1) re reconstruction methods (1) lysis and biological proxies (2) ange in arid regions (1) y geochronology (1) and coastal change (1) anges in East Asia (1) ange impacts on human evolution and society (1) rming and future climate change (1)				
Course Learning Outcomes	1. Underst 2. Underst 3. Learn th 4. Underst	cessful completion of this course, student should be all and the earth climate change during last 2.6 million yea and the driving forces of climate changes in different so the methods for palaeo-environment reconstruction. and the impacts of climate changes. ize and interpret data sets of climate change proxies.	ars.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EA	SC2401 Fluid/solid interactions in earth processes				
Offer in 2014 - 2015	N		Examina	ation		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive course learning outcomes. Show strong analytical and critical ab thought, and ability to apply knowledge to a wide range of compeffective organizational and presentational skills.	ilities and logical th	inking, with e	vidence of original	
		Demonstrate substantial command of a broad range of knowledge 428	ge and skills require	ed for attainir	ng at least most of	

	В	the course learning outcomes. Show evider apply knowledge to familiar and some unfam			
	С	Demonstrate general but incomplete comm learning outcomes. Show evidence of some knowledge to most familiar situations. Apply	analytical and critical abilities and log	ical thinking, and ability to apply	
	D	Demonstrate partial but limited command of outcomes. Show evidence of some cohere Show limited ability to apply knowledge to presentational skills.	nt and logical thinking, but with limited	d analytical and critical abilities.	
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no abilit knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture w	vith laboratory component course			
Course Teaching & Learning Activities	Activitie	es .	Details	No. of Hours	
& Learning Activities	Lectures	3	12 sessions x 2 hours	24	
	Laboratory		2 sessions	4	
	Field work		1 half-day fieldtrip	5	
	Tutorials	·	8 sessions	16	
	Reading	/ Self study		90	
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)	
	Assignm	ents		50	
	Examination 50				
Required/recommended reading and online materials	J.J. Lowe and M.J.C. Walker Reconstructing Quaternary Environments. (Harlow, Essex : Addison Wesle Longman, 1997, 2nd ed) W.F. Ruddiman: Earths climate: Past and future (Freeman, 2008, 2nd ed.) D.E. Anderson, A.S. Goudie and A.G. Parker: Global Environments through the Quaternary (Oxford, 200)			•	
Additional Course Information	Previous	course code & title: EASC2131 A Coo	l World: Ice Ages and Climate C	Change	

EASC3408 Geophysics	(6 credits)		Academic Year	2014			
Offering Department	Earth Scie	nces	Quota				
Course Co-ordinator	Prof P Wu	Prof P Wu, Earth Sciences (ppwu@hku.hk) Prof P Wu, Earth Sciences					
Teachers Involved	Prof P Wu	, Earth Sciences					
Course Objectives	An overview of the geophysical characteristics and processes of the solid earth and a survey of the various geophysical disciplines, including seismology, gravity, geothermometry, geomagnetism and paleomagnetism as well as exploration geophysical methods for studying the earth's interior and near subsurface structure.						
Course Contents & Topics	- Earthqua - Seismic v - Seismicit - Gravity a - Isostasy : - Geomagi - Paleoma - Thermal - Applied C - Applied C	nd gravity anomalies and Geodesy					
Course Learning Outcomes	1. Describe 2. Apply ba 3. Describe 4. Underst	On successful completion of this course, students should be able to: 1. Describe the approaches and methods geophysicists use to study the interior of the earth. 2. Apply basic techniques in measurements of earthquakes and interpret a seismogram. 3. Describe the procedure to determine gravity anomalies and their interpretation. 4. Understand the methods of paleomagnetism and describe the processes of rock magnetisation. 5. Describe how density, pressure and temperature of the earth's interior are determined.					
Pre-requisites (and Co-requisites and Impermissible combination)		ASC2401 Fluid/solid interactions in earth processes or EAS ry mechanics	SC2402 Field metho	ods or PHYS225			
Offer in 2014 - 2015	Y 2nd	sem	Examination	May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	Α	Demonstrated an in-depth understanding of the subject well above the expachieving over 80% of total marks and an ability to pursue advance-level s					
	В	Demonstrate an understanding of the subject at the appropriate level of total course marks. A greater effort and further preparation are neede geophysics.					
		Coursework and examination results reflect only only a basic understanding 429	ng of the subject without	the ability to carry ou			

	С	in-depth analysis. Achieved 60-70% of total	course marks.			
	D	Demonstrated an insufficient understanding reflective only of the time the student puts in	of the subject as total course mark achieved is belo on the subject.	ow 60%. The pass grade is		
	Fail	A total lack of effort and insufficient ability to understand the subject and failure to achieve 50% of the available marks.				
Course Type	Lecture	with laboratory component course				
Course Teaching	Activiti	es	Details	No. of Hours		
& Learning Activities	Lecture	s	12 sessions x 2 hours	24		
	Laborat	tory	8 paper exercises, 2 field exercises on exploration geophysical methods	24		
	Readin	g / Self study		100		
Assessment Methods and Weighting	Method	ds	Details	Weighting in final course grade (%)		
	Examin	ation		60		
	Laborat	tory reports		40		

LACCOTOS Igricous ana il	ietainoi pini	c petrogenesis (6 credits)	Academic Year	2014		
Offering Department	Earth Scient	ences	Quota	30		
Course Co-ordinator	Prof M Sun, Earth Sciences (minsun@hku.hk) Prof M Sun, Farth Sciences					
Teachers Involved	Prof M Sun, Earth Sciences Prof G Zhao, Earth Sciences					
Course Objectives	To provide a comprehensive coverage of the principles and techniques used in the study of petrogenesis of igneous and metamorphic rocks and their cause-and-effect relationships with tectonic settings and crustal evolution.					
Course Contents & Topics Course Learning Outcomes	- Applicati - Basaltic - Granitic - Magmati - Magmati - Types of - Chemica etc) - Metamo - On succes	generation: physiochemical conditions and tectonion of trace elements and isotopes to the study of magmatism and mantle characteristics magma and crustal characteristics sm and crustal growth metamorphism all equilibrium/disequilibrium in metamorphism; multiplic processes and reactions rephic petrogenesis and evolution of pelitic rocks rephic petrogenesis and evolution of mafic rocks rephism in different tectonic settings; metamorphinic implications.	magma genesis etamorphic phase diagrams (c pressure-temperature-time	(P-T-t) paths and		
	major igne	ck associations, textures, structures and geochen eous rocks.		ne petrogenesis (
Pro-roquisitos	major igne 2. Use ma 3. Apply n infer the to 4. Demon and-effect	eous rocks. Igmatic rocks to study the mantle and crustal char- nineral assemblages, microtextures, mineral react- ectonothermal evolution of metamorphic rocks. It is the knowledge and understanding of magmatical relationships with tectonic settings and crustal evolutions.	racteristics. ion relationships and metamo	orphic P-T paths t		
and Co-requisites and	major igne 2. Use ma 3. Apply n infer the to 4. Demon and-effect	eous rocks. Igmatic rocks to study the mantle and crustal chare Inneral assemblages, microtextures, mineral react In ectonothermal evolution of metamorphic rocks. It is strate knowledge and understanding of magmati	racteristics. ion relationships and metamo	orphic P-T paths t		
and Co-requisites and mpermissible combination)	major igne 2. Use ma 3. Apply n infer the to 4. Demon and-effect Pass in E.	eous rocks. Igmatic rocks to study the mantle and crustal char- nineral assemblages, microtextures, mineral react- ectonothermal evolution of metamorphic rocks. It is the knowledge and understanding of magmatical relationships with tectonic settings and crustal evolutions.	racteristics. ion relationships and metamo	orphic P-T paths t		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	major igne 2. Use ma 3. Apply n infer the to 4. Demon and-effect Pass in E.	eous rocks. Igmatic rocks to study the mantle and crustal chare Inneral assemblages, microtextures, mineral react ectonothermal evolution of metamorphic rocks. Istrate knowledge and understanding of magmati relationships with tectonic settings and crustal events of the settings and crustal events.	racteristics. ion relationships and metamo c and metamorphic processe volution.	orphic P-T paths as and their caus		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	major igne 2. Use ma 3. Apply n infer the te 4. Demon and-effect Pass in E.	eous rocks. Igmatic rocks to study the mantle and crustal chare Inneral assemblages, microtextures, mineral react ectonothermal evolution of metamorphic rocks. Istrate knowledge and understanding of magmati relationships with tectonic settings and crustal events of the settings and crustal events.	racteristics. ion relationships and metamo c and metamorphic processe volution.	orphic P-T paths to		
Pre-requisites (and Co-requisites and mpermissible combination) (Offer in 2014 - 2015 (Offer in 2015 - 2016 (Course Grade (Grade Descriptors	major igne 2. Use ma 3. Apply n infer the te 4. Demon and-effect Pass in E. Y 2nd Y	eous rocks. Igmatic rocks to study the mantle and crustal chare Inneral assemblages, microtextures, mineral react ectonothermal evolution of metamorphic rocks. Istrate knowledge and understanding of magmati relationships with tectonic settings and crustal events of the settings and crustal events.	racteristics. ion relationships and metamor c and metamorphic processe rolution. Examination Inced level required for attaining all d logical thinking, and ability to app of data and results to draw appro	orphic P-T paths to a sand their cause. May I the course learning by highly effective later.		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	major igne 2. Use ma 3. Apply n infer the te 4. Demon and-effect Pass in E. Y 2nc Y A+ to F	Demonstrate extensive knowledge and skills at an adva outcomes. Show strong analytical and critical abilities an skills and techniques to solve problems. Critical use of signature of the solutions of the strate with the confidence of the solution of the solution of the strate of the solution of the so	racteristics. ion relationships and metamor c and metamorphic processe rolution. Examination Examination Inced level required for attaining all d logical thinking, and ability to app of data and results to draw appro entational skills. nowledge and skills required for atta all and critical abilities and logical ti ms. Correct use of data of results	orphic P-T paths to a sand their cause. May I the course learning by highly effective late priate and insightful ining at least most on hinking, and ability to		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	major igne 2. Use ma 3. Apply n infer the te 4. Demon and-effect Pass in E. Y 2nc Y A+ to F	peous rocks. Igmatic rocks to study the mantle and crustal char Inneral assemblages, microtextures, mineral react ectonothermal evolution of metamorphic rocks. Istrate knowledge and understanding of magmatic relationships with tectonic settings and crustal evolutionships with tectonic settings and crustal evolutions. Demonstrate extensive knowledge and skills at an advaoutcomes. Show strong analytical and critical abilities an skills and techniques to solve problems. Critical use of conclusions. Apply highly effective organizational and present the course learning outcomes. Show evidence of analytic apply effective lab skills and techniques to solve problems.	cacteristics. ion relationships and metamor c and metamorphic processe rolution. Examination Examination Inced level required for attaining all d logical thinking, and ability to app of data and results to draw appro entational skills. required for attaining all and critical abilities and logical ti ans. Correct use of data of results and skills required for attaining d critical abilities and logical thinking blems. Mostly correct but some error	may May The course learning by highly effective lat priate and insightful ining at least most on hinking, and ability to draw appropriate g most of the course g, and ability to apply leous use of data an		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	major igne 2. Use ma 3. Apply n infer the te 4. Demon and-effect Pass in E. Y A+ to F A B	peous rocks. Igmatic rocks to study the mantle and crustal chart inneral assemblages, microtextures, mineral react ectonothermal evolution of metamorphic rocks. Strate knowledge and understanding of magmatic relationships with tectonic settings and crustal evolutionships with tectonic settings and crustal evolutionships with tectonic settings and crustal evolutions. Ascardage of the set of the	Examination C and metamorphic processes colution. Examination Examination Examination Examination C and metamorphic processes colution. Examination Examination C attaining all d logical thinking, and ability to apport data and results to draw approentational skills. Correct use of data of results consults with simulational skills. Examination Correct use of data of results consults with simulation of critical abilities and logical thinking degrees. Mostly correct but some error effective organizational and presented skills required for attaining some of the consults of th	May The course learning by highly effective lat priate and insightfur to draw appropriate g most of the course g, and ability to apply leous use of data anational skills. Of the course learning d critical abilities, and bility to use data and the course learning to the course learning the course learning to the course learning to the course learning the course l		

	outcomes. Lack of analytical and critical abilities, logical and coherent thinking, and ability to effective or ineffective lab skills and techniques to solve problems. Misuse of data and results and/o appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture with laboratory component course				
Course Teaching & Learning Activities	Activities	Details	No. of Hours		
& Learning Activities	Lectures		24		
	Laboratory		24		
	Reading / Self study		100		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments		50		
	Examination		50		
Required/recommended reading and online materials	M.G. Best: Igneous and Metamorphic Pet	rology (Oxford Blackwell Scienc	e, 2003, 2nd ed.)		
Additional Course Information	John D Winter: An Introduction to Igneous	and Metamorphic Petrology (P	rentice Hall, 2001)		

EASC3410 Hydrogeology (
Offering Department	Earth Sci	ences			Quota	40
Course Co-ordinator	Prof J J Jiao, Earth Sciences (jjiao @hku.hk) Prof J J Jiao, Earth Sciences					
Teachers Involved	Prof J J J	ao, Earth Sciences				
Course Objectives	This course aims to introduce some basic concepts and theories of groundwater flow with special reference to case studies in HK. It consists of three components: 1) fundamentals of groundwater physics 2) well hydraulics and evaluation of groundwater as a resource; and 3) influence of groundwater on geotechnical and environmental engineering					
Course Contents & Topics	Hydrologic Cycle And water Budgets, Introduction to Hydrogeology (1 Week) Properties Of Aquifers (2 Weeks) Hydraulic head and flow net(2 Weeks) Basic Equations of Groundwater Flow (1 Week) Groundwater Flow To Wells (1 Week) Analysis Of Aquifer Test(2 Weeks) Well installation & pumping test design(1 Week) Regional Groundwater Flow Systems (HK case study)(1 Week) Groundwater contamination (China case study)(Week 12)					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Appreciate the importance of hydrogeology in geotechnical and environmental engineering. 2. Understand basic concepts of hydrological cycle and water balance, and interaction between groundwater and surface water. 3. Appreciate the close relationship between groundwater system and geology and topography. 4. Understand basic concepts of aquifer and aquifer properties, hydraulic head, flow net, and basic principles of groundwater flow. 5. Use basic field aquifer tests to estimate some important aquifer parameters					
			o estimate some	e important aquifer pa	arameters	
Pre-requisites (and Co-requisites and Impermissible combination)	5. Use ba			e important aquifer pa	arameters	
and Co-requisites and mpermissible combination)	5. Use ba	sic field aquifer tests t		e important aquifer pa	arameters Examination	Dec
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	5. Use ba	sic field aquifer tests t ASC2402 Field metho		e important aquifer pa		Dec
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	5. Use ba	sic field aquifer tests t ASC2402 Field metho		e important aquifer p		Dec
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	5. Use bath Pass in E	sic field aquifer tests the ASC2402 Field method sem Demonstrate thorough course learning outcom	mastery at an adva es. Show strong ar apply knowledge t	nced level of extensive kr alytical and critical abilitie		ed for attaining all the
(and Co-requisites and	Pass in E Y 1s Y A+ to F	sem Demonstrate thorough course learning outcom thought, and ability to organizational and pres Demonstrate substantia the course learning out	mastery at an adva es. Show strong ar apply knowledge t entational skills. at command of a bro	nced level of extensive kr alytical and critical abilitie o a wide range of comp pad range of knowledge a ence of analytical and crit	Examination nowledge and skills require and logical thinking, with	ed for attaining all the n evidence of original pply highly effective ining at least most of ninking, and ability to
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in E Y 1s Y A+ to F	Demonstrate thorough course learning outcom the course learning outcom the course learning outcom the course learning out apply knowledge to mos Demonstrate general blearning outcomes. Sho	mastery at an adva es. Show strong ar apply knowledge t entational skills. Il command of a brocomes. Show evide st practical problems ut incomplete common evidence of som	nced level of extensive kr alytical and critical abilitie o a wide range of comp and range of knowledge a snce of analytical and crit s. Apply effective organiza and of knowledge and s e analytical and critical a	Examination nowledge and skills require and logical thinking, with problems. A condition of the state of the	ed for attaining all the n evidence of original pply highly effective ining at least most of ninking, and ability to kills.
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Fass in E Y 1s Y A+ to F B	Demonstrate thorough course learning outcom thought, and ability to organizational and pres Demonstrate substantia the course learning out apply knowledge to more Demonstrate general blearning outcomes. She knowledge to some Demonstrate partial bulloutcomes. Show evide	mastery at an advales. Show strong ar apply knowledge tentational skills. Il command of a brocomes. Show evidest practical problems ut incomplete common evidence of some color some cohernapply knowledge to	nced level of extensive kr alytical and critical abilitie o a wide range of comp and range of knowledge a ence of analytical and critical and the company of the company and of knowledge and se e analytical and critical a ly moderately effective or f knowledge and skills re- ent and logical thinking,	Examination nowledge and skills require as and logical thinking, with lex practical problems. A and skills required for attatical abilities and logical thinking thinking skills required for attaining bilities and logical thinking bilities and logical thinking thinking the skills required for attaining the skil	ed for attaining all the n evidence of original pply highly effective ining at least most of ninking, and ability to kills. g most of the course g, and ability to apply ional skills. of the course learning and critical abilities.
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in E Y 1s Y A+ to F A B	Demonstrate thorough course learning outcom the course learning outcom thought, and ability to organizational and presupply knowledge to more practice. Demonstrate general blearning outcomes. Show learning outcomes. Show limited ability to and presentational skills Demonstrate little or noutcomes. Lack of anal	mastery at an advalues. Show strong an apply knowledge tentational skills. It commens show evides tractical problems ut incomplete commens of some comes of some conce of some coherapply knowledge to it.	nced level of extensive kralytical and critical abilitie of a wide range of composed range of knowledge a concern of analytical and critical and manufacture of knowledge and skills regent and logical thinking, solve practical problems.	Examination nowledge and skills require so and logical thinking, with solex practical problems. A logical abilities and logical thinking and presentational and pres	ed for attaining all the nevidence of original pply highly effective ining at least most of inking, and ability to ikills. If most of the course, and ability to apply ional skills. If the course learning and critical abilities, fective organizational the course learning or no ability to apply or no ability to apply
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Fail	Demonstrate thorough course learning outcom the course learning outcom thought, and ability to organizational and presupply knowledge to more practice. Demonstrate general blearning outcomes. Show learning outcomes. Show limited ability to and presentational skills Demonstrate little or noutcomes. Lack of anal	mastery at an advalues. Show strong an apply knowledge tentational skills. Il command of a brocomes. Show evidest practical problems apply knowledge to some cohern of some cohern one of some cohern one of some cohern one of some cohern opply knowledge to some opply kno	nced level of extensive kralytical and critical abilitie of a wide range of composed range of knowledge a concern of analytical and critical and manufacture of knowledge and skills regent and logical thinking, solve practical problems.	Examination nowledge and skills requires and logical thinking, with search skills required for attained abilities and logical thinking and skills required for attaining bilities and logical thinking ganizational and presentat quired for attaining some of but with limited analytical Apply limited or barely effective skills required for attaining to thinking. Show very little thinking. Show very little thinking.	ed for attaining all the nevidence of original pply highly effective ining at least most of inking, and ability to ikills. If most of the course, and ability to apply ional skills. If the course learning and critical abilities, fective organizational the course learning or no ability to apply or no ability to apply

	Lectures	12 sessions x 2 hours	24
	Laboratory	10 x 2 hours	20
	Field work	Half day field trip	5
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		30
	Examination		70
Required/recommended reading and online materials	C. W. Fetter: Applied Hydrogeology	(Pearson Education Limited, 2014, 4th ed.)	

EASC3412 Earth resource	s (6 credits				Academic Year	2014
Offering Department	Earth Scien	ces			Quota	40
Course Co-ordinator	Prof M F Z	ou, Earth Sciences (mfz	zhou @hku.hk)			
Teachers Involved		ou, Earth Sciences o, Earth Sciences				
Course Objectives	understand	To provide students with knowledge about the classification of mineral deposits and their basic features; to understand the processes that lead to their formation; to gain hand on experience with mining procedures. In addition, students should gain knowledge about the world wide distributions of mineral and industrial resources.				
Course Contents & Topics	mineral de	Concepts in mineral deposits and mining industrial; exploration and mining methods, classification of mineral deposit, mineral deposit models, magmatic oxide and sulfide deposits, skarn deposits, porphyre deposits, volcanogenic massive sulfide deposits, coal, oil and gas, resource evaluation.				
Course Learning Outcomes	On succes	On successful completion of this course, students should be able to:				
	 Understa Understa 	nd the terminology and and factors that are key to the controls of earth and methods of explorations.	o the formation resources in a g	of metallic and indu global scale.	strial resources.	posits.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EA	SC2402 Field methods o	or EASC3402 Po	etrology		
Offer in 2014 - 2015	Y 1st s	em			Examination	Dec
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough understanding at an advanced level of extensive knowledge and skills with evidence for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking. Evidence of original thoughts, excellent field observation and ability to solve problems. Highly effective organization and presentation skills.				
	В	Demonstrate substantial understanding at an advanced level of extensive knowledge and skills with evidence for attaining all the course learning outcomes. Show analytical and critical abilities and logical thinking. Evidence of original thoughts and abilities of field observation. Effective organization and presentation skills.				
	С	Demonstrate general but incomplete understanding required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking. Moderately effective organization and presentation skills.				
	D	Demonstrate partial but limited understanding for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail No or little knowledge about the subject. No evidence for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Very little or no ability for field observation and for solving problems. Poor organization and presentational skills.					
Course Type	Lecture wit	n laboratory component	course			
Course Teaching	Activities			Details		No. of Hours
& Learning Activities	Lectures			2 hour lectures per weeks	week for 10	20
	Laborator					20
	Field work			1 overseas camp		40
	Reading /	Self study				100
Assessment Methods and Weighting	Methods			Details		Weighting in fina course grade (%)
	Assignme	nts	(Oversea field trip		20
	Examinati	on				60
	Laborator	reports				20
Required/recommended	TBC					

ASC3413 Engineering geology (6 credits)				Academic Year	2014	
Offering Department	Earth Scien	nces		Quota	40	
Course Co-ordinator	Prof J J Jia	o, Earth Sciences (jjiao@hku.hk)				
Teachers Involved		o, Earth Sciences one, Earth Sciences				
Course Objectives	To present some of the concepts and skills of importance in the profession of Engineering Geology and illustrate their use by case histories.					
Course Contents & Topics	and skills	Introduction to engineering design and the role of the Engineering Geologist; site investigation concepts and skills (air photo interpretation, soil and rock description, engineering geological plans, reporting); slopes, foundations. Case histories from Hong Kong.				
Course Learning Outcomes	Apprecial engineering Make solutions and activities activities activities and activities	sful completion of this course, student ate how civil engineering design is of projects, particularly the economic-aimple engineering-geological models ground investigation design should bout simple air photo interpretation on for engineering purposes. and major types of slope failures and but stability analyses using methods s	carried out and under and safety-critical duter and understand he e carried out. tasks and element coasic methods to con uch as the limit equ	ties. ow desk study, site ary soil and rock atrol and mitigate lan	description and addides.	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EA	SC3410 Hydrogeology, or already en	rolled in this course			
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge and skills to solve a wide range of complex, familiar and unfamiliar practical problems. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge and skills to solve familiar and some unfamiliar practical problems. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge and skills to solve most familiar, but not unfamiliar, practical problems. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge and skills to solve familiar practical problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abili knowledge and skills to practical problems ineffective.	ties, logical and coherent	thinking. Show very little	or no ability to apply	
Course Type	Lecture wit	h laboratory component course				
Course Teaching & Learning Activities	Activities		Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laboratory	,			20	
	Field work		half day field trip		5	
	Reading /	Self study			90	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	nts	including field repo	ort	30	
	Examinati	on			70	
Required/recommended reading and online materials	Goodman,	R. E.: Engineering Geology (Wiley, 19	993)			

EASC3414 Soil and rock me	Academic Year	2014			
Offering Department	Earth Sciences Quota				
Course Co-ordinator	Prof J J Jiao, Earth Sciences (jjiao @hku.hk)				
Teachers Involved	ved Prof J J Jiao, Earth Sciences				

	Dr Yanroi	ng Li, Geotechnical Company				
Course Objectives		e a basic knowledge of soil and rock m engineering geology/geotechnics.	echanics for those w	ishing to consider	further studies on a	
Course Contents & Topics	stress; st	Stress and strain; properties and classifications of soil and rock; clay minerals; pore pressure and effective stress; strength and failure criteria, initial stresses and their measurement; deformation; consolidation; planes of weakness in rocks; ground treatment methods.				
Course Learning Outcomes	1. Unders criteria. 2. Unders	On successful completion of this course, students should be able to: 1. Understand basic concepts of stress and strain, pore pressure and effective stress, strength and failure criteria. 2. Understand basic properties and classifications of soil and rock. 3. Appreciate the process of rock deformation and soil consolidation.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in E	ASC3410 Hydrogeology, or already en	rolled in this course			
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abskills are minimally effective or ineffective.				
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				24	
	Laborato	ry			24	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	5	Details		Weighting in final course grade (%)	
	Assignm	ents			30	
	Examina	tion			70	
Required/recommended reading and online materials		g: Soil Mechanics (Chapman & Hall, 6t odman: Introduction to Rock Mechanics		, 1989)		

EASC3415 Meteorology (6	credits)	Academic Year	2014			
Offering Department	Earth Sciences	Quota				
Course Co-ordinator	Or Z H Liu, Earth Sciences <i>(zhliu@hku.hk)</i>					
Teachers Involved	Dr Z H Liu, Earth Sciences Dr M H Lee, Earth Sciences					
Course Objectives	This course provides students with a modern understanding of weath the processes that govern atmospheric structure and behavior, weath					
Course Contents & Topics	Energy budget, radiative forcing, and greenhouse effect; stability, convection, and lapse rates; equation of state and pressure; thermodynamic diagrams; weather charts; Forces, winds, and general circulation; Monsoons, air masses, and fronts; thunderstorms, mid-latitude cyclones, and tropical cyclones; basic equations of the atmosphere; weather forecasting.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe key aspects of weather phenomena. 2. Explain essential elements of atmospheric processes governing words. Apply physical principles to construct models for some basic aspect. Explain synoptic charts (weather maps). 5. Interpret Hong Kong weather (typhoons etc.).					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EASC2404 Introduction to atmosphere and hydrosphere					
Offer in 2014 - 2015	Y 1st sem	Examination	Dec			

Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	Α	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Demonstrate critical use of data and results to draw appropriate and insightful conclusions. Show insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Demonstrate correct use of data and results to draw appropriate conclusions. Show critical use of relevant information from sources and ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly.					
	С						
	D	outcomes. Show evidence of some cohere Show limited ability to apply knowledge to	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Demonstrate limited ability to use data and results to draw appropriate conclusions. Show use and reference of several sources, but mainly through summary rather than				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Demonstrate misuse of data and results and/or unable to draw appropriate conclusions. Show limited use of secondary sources and no critical comparison of them.					
Course Type	Lecture-	based course					
Course Teaching	Activities		Details	No. of Hours			
& Learning Activities	Lecture	S		36			
	Project	work		36			
	Tutorial	S		12			
	Reading / Self study			48			
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)			
	Assignr	nents		25			
	Examin	ation	2-hour written exam	50			
	Project	report		25			
Required/recommended reading and online materials	(Brooks/	ald Ahrens, Meteorology Today, An Cole, 2013). 3. Stull, Meteorology for Scientists and E	·				

EASC3416 Advanced geod	chemistry and g	eochronology (6 credits)		Academic Year	2014	
Offering Department	Earth Sciences			Quota	50	
Course Co-ordinator	Prof M F Zhou, E	arth Sciences (mfzhou@hku.hi	k)			
Teachers Involved	Prof M F Zhou, E Dr S H Li, Earth Prof M Sun, Eart	Sciences				
Course Objectives		To present key concepts of modern geochemistry and geochronology and their application to environmental and Earth science problems.				
Course Contents & Topics	2. Zircon U-Pb is3. Principles and4. Introduction to	adiogenic isotopic dating and m otopic dating and its applicatior techniques for dating mineral d Quaternary geochronology elopment and applications of Lu	n leposits			
Course Learning Outcomes	-demonstrate kn-explain principle- understand how	ompletion of this course, studen owledge of concepts and ideas is of radiogenic isotopic dating of modern analytical techniques we geochemical methods are a	of modern geochemis are applied to dating	earth materials	nvironmental ar	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in EASC24 Mineralogy	01 Fluid/solid interactions in ea	arth processes or EA	SC2406 Geochemis	stry or EASC24	
Offer in 2014 - 2015	Y 2nd sem			Examination	May	
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	attair evide and	ent demonstrates thorough mastery a ing all course learning outcomes. SI nce of original thought, and the ability at the same, can combine fundamentals, fluids and gases and how these pr	nows strong analytical ar to apply his/her knowledge tal knowledge in geocher	nd critical abilities and to a wide range of problemstry to understand the	logical thinking, wit ems in geochemistre interactions amon	

		global scale. Student shows the ability to apply highly	effective organizat-ional and presenta	ational skills.
	В	Student demonstrates substantial command of a bro most of the course learning outcomes. Show evider apply his/her knowledge to a range of problems geochemistry to understand material fluxes among m global scale. Student shows the ability to apply effecti	nce of analytical and critical abilities in geochemistry, and at the same ninerals, fluids and gases over geolog	and logical thinking, and combine knowledge in ical time periods and on a
	С	Student demonstrates general but incomplete comm course learning outcomes. Show evidence of some a apply his/her knowledge to a range of problems in g gases impact material fluxes on a global scale. Stude and presentational skills.	analytical and critical abilities and logi geochemistry and how interactions ar	ical thinking, and ability to mong minerals, fluids and
	D	Student demonstrates partial but limited command of learning outcomes. Show evidence of some cohere abilities. Show limited ability to understand key to knowledge to geological phenomena. Student shows presentational skills.	ent and logical thinking, but with limitopics in geochemistry and limited of	ted analytical and critical apability to transfer this
	Fail	Student demonstrates little or no evidence of comm learning outcomes. Lack of analytical and critical abili to apply knowledge to understand basic topics relate geological problems. Organization and presentational	ties, logical and coherent thinking. She do to the geochemistry and the applications	ows very little or no ability ation of these principles to
Course Type	Lecture w	h laboratory component course		
Course Teaching & Learning Activities	Activities	Deta	nils	No. of Hours
& Learning Activities	Lectures			24
	Laborato	y Up to	o 24 hours	24
	Discussion	n Up to	o 24 hours	12
Assessment Methods and Weighting	Methods	Deta	ails	Weighting in final course grade (%)
	Examinat	on One	2-hour written examination	40
	Test		rsework assessments: 2 erms, and student seminars	60
Required/recommended reading and online materials	Geochem	stry by William M. White (Wuley, Apr 1, 2013)	

EASC3999 Directed stud	ASC3999 Directed studies in earth sciences (6 credits) fering Department Earth Sciences							
Offering Department	Earth Scien	nces	Quota					
Course Co-ordinator	Prof M Sun	of M Sun, Earth Sciences (minsun@hku.hk)						
Teachers Involved								
Course Objectives	To enhance thinking ski	e the student's knowledge of a particular topic and the stud lls.	dent's self-directed le	earning and critica				
Course Contents & Topics	member. T be a critical	each tundertakes a self-managed study on a topic in earth sciences under the supervision of a staff ember. The topic is preferably one not sufficiently covered in the regular curriculum. The directed study can a critical review or a synthesis of published work on the subject, or a laboratory or field study that would shance the student's understanding of the subject. The project may not require an element of originality.						
Course Learning Outcomes	1. Enhance	sful completion of this course, students should be able to: e the ability in self-learning, data-collection and analysis earth sciences. entific dissertation, and conduct oral presentation of the rese		loing independen				
				VVV\. and				
(and Co-requisites and Impermissible		east 24 credits of advanced level earth sciences courses (EA GPA of 2.5 or above.	ASC3XXX or EASC4	AAA), and				
(and Co-requisites and Impermissible combination)	Cumulative		ASC3XXX or EASC4	No Exam				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Cumulative	GPA of 2.5 or above.		,,				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Cumulative Y Year	GPA of 2.5 or above.		,,				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Cumulative Y Year Y	GPA of 2.5 or above.	Examination ritical abilities and logical ormation drawn from a fu draw insightful conclusion A+ should show conside	No Exam thinking, with evidence II range of high quality is and solve problems				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Y Year Y A+ to F	Demonstrate thorough grasp of the subject. Show strong analytical and cr of original thought. Insightful use and critical analysis / evaluation of info sources and to quote/reference aptly. Critical use of data and results to a Apply highly effective organizational and presentational skills. [Work of J. 2015]	Examination ritical abilities and logical ormation drawn from a fu draw nispiful conclusion A+ should show conside topic.] critical abilities and logic gful comparisons betwee sults to draw appropriate	No Exam thinking, with evidence Il range of high quality is and solve problems rable creative thinking all thinking. Critical uses and different secondary				
Offer in 2015 - 2016	Y Year Y A+ to F	Demonstrate thorough grasp of the subject. Show strong analytical and cr of original thought. Insightful use and critical analysis / evaluation of info sources and to quote/reference aptly. Critical use of data and results to a Apply highly effective organizational and presentational skills. [Work of and additional work beyond that is required in wider areas relevant to the to Demonstrate substantial grasp of the subject. Evidence of analytical and of relevant information from sources, showing ability to make meaning interpretations and to quote/reference aptly. Correct use of data of results and to get the subject of the subject in the subject of the subjec	Examination ritical abilities and logical ormation drawn from a fudraw insightful conclusion A+ should show conside topic.] critical abilities and logic gful comparisons betwee sults to draw appropriate and presentational skills. some analytical and critic te comparisons between the comparisons the comparison that the com	thinking, with evidence of the state of the				

	Fail	Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of litt analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and present are minimally effective or ineffective.				
Course Type	Project-b	pased course				
Course Teaching & Learning Activities	Activiti	es	Details	No. of Hours		
& Learning Activities	Reading	g / Self study	the student is expected to spen at least 120 hours on the project			
Assessment Methods and Weighting	Method	Is	Details	Weighting in final course grade (%)		
	Resear	ch report		100		

EASC4403 Biogeochemica	al cycles (6	credits)	Academic Yea	r 2014		
Offering Department	Earth Sci	ences	Quota			
Course Co-ordinator	Dr Y Li, E	arth Sciences (yiliang@hku.hk)				
Teachers Involved	Dr Y Li, E	arth Sciences				
Course Objectives	geospher life. Hum	This course presents how the basic geochemistries of the Earth system, from atmosphere to the geosphere and to hydrosphere, have been and are being affected by the origin, evolution and existence of life. Human activities in particular, from the rapid consumption of resources to the destruction of the rainforests and the expansion of cities, are leading to rapid changes in the geochemistry of the Earth systems.				
Course Contents & Topics	2) Geobic 3) Terresi 4) Aquatic 5) Marine 6) Phospl 7) Sulfur 8) Carbor 9) Nitroge	cycle	ole in the Earth system			
Course Learning Outcomes	Describ Illustrat Draw of to biogeo	ssful completion of this course, students on the major geochemical cycles on Earlie the interactions between the geochemican connections between changes to the Earlichemical cycles.	th. nical cycles and the main environment rth systems and the cause/effect relati	onships of change		
Pre-requisites (and Co-requisites and Impermissible combination)		NVS3313 Environmental oceanography d geochemistry and geochronology	or EASC3403 Sedimentary environn	nents of EASC341		
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical activities and logical thinking.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcome. Show evidence of analytical and critical abilities and logical thinking.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Apply moderately effective organizational and presentational skills. Show interest in the taught topics, and to answer most questions correctly.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. She limited ability to apply knowledge to solve problems. Show some interest in the taught topics. Able to answer more than half of question correctly.					
	Fail	outcomes. Lack of analytical and critical abiliti	nd of knowledge and skills required for attainies, logical and coherent thinking. Show very lit positive attitude in learning; not able to answer	tle or no ability to apply		
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details	No. of Hour		
& Learning Activities	Lectures			2		
	Tutorials			1		
	Group w	ork	PBL group work	1		
	Project v		Writing course thesis	3		
	-	/ Self study	0 111	5		
Assessment Methods and Weighting	Methods	3	Details	Weighting in fina course grade (%		
	Essay			60		

	Examination	40
Required/recommended reading and online materials	Biogeochemistry: An Analysis of Global Change, Fundamentals of Geobiology, edited by Andrew H	

EASC4406 Earth dynamic	s (6 credits)		Academic Year	2014		
Offering Department	Earth Scie	nces	Quota			
Course Co-ordinator	Prof G Zha	o, Earth Sciences (gzhao@hku.hk)				
Teachers Involved		o, Earth Sciences Earth Sciences				
Course Objectives	To review the concepts and processes that shape the configuration of the Earth, from core to crust. This course is intended to provide students with an understanding of the driving forces of Earth processes and the global outcome of these processes through an examination of direct and indirect observations, the evolution of hypotheses, and critical thinking.					
Course Contents & Topics	- Plate tect - Mantle cc - Energy a - Methods - Structure - Isostasy; - Sea floor - Subductic - Formation - Continen - Sediment	a heat engine; Earth's interior; major features of the onics; orogenesis; crustal growth. Solvection; hot spots and plumes; and driving forces of Earth processes; of investigation of large scale structures and procest and physical properties of the planet; continental drift; spreading; ocean ridges; transform faults; on zones; mountain belts and orogenesis; and of continental crust; tall rifts and continental margins; arry basins; arry, consequence and implication of plate tectonics.	esses;			
Course Learning Outcomes	1. Have an 2. Underst 3. Appreci processes 4. Distill of	appreciation of this course, students should be appreciation of the Earth as a dynamic planet. and how energy release within the Earth is transla ate the importance of a knowledge of the hist a wide range of data to differentiate competing get concise written and oral summaries of literature responses.	ted into geological processe ory of investigation of glob cological theories.	oal scale tectonic		
Pre-requisites and Co-requisites and mpermissible combination)		Pass in EASC3403 Sedimentary environments or EASC3404 Structural geology or EASC3406 Geophysics or EASC3409 Igneous and metamorphic petrogenesis				
Offer in 2014 - 2015	Y 2nd	sem	Examination	May		
Offer in 2015 - 2016	Υ		'	·		
Course Grade	A+ to F					
Grade Descriptors	A	A The student should show a thorough mastery of the knowledge and skills necessary to attain all of the course outcomes, have an in-depth grasp of the subject, and provide evidence of strong analytical and logical thinking, where possible with original thought. Show outstanding and effective organizational and presentation skills, and the insightful use of data, literature reviews and other sources to undertake a high level of critical analysis and draw appropriate conclusions. Be able to integrate the full range of appropriate theories, principles, and evidence.				
	В	B The student should show a substantial knowledge of a significant range of the skills necessary for attaining most, in not all, of the course outcomes, and have a substantial grasp of the subject. Show evidence of the ability to thind critically and to have effective organizational and presentational skills and make critical use of relevant information from different sources, showing the ability to make comparisons between consequent interpretations. Be capable of the general integration of theories, principles and evidence.				
	С	The student should have a general command of the knowledge, competencies and skills required for attaining the majority of the course outcomes, and a general grasp of the subject. Show some evidence of critical ability and logical thinking and moderately effective organizational and presentational skills. The student should be moderately effective in the use of data to draw appropriate conclusions, should be able to use relevant information from sources and able to make comparisons between different interpretations, through partial integration of theories, principles and evidence.				
	D	The student should have a partial but limited command of the knowledge, competencies and skills necessary for attaining a number of the course learning outcomes, and a limited grasp of the subject. Show evidence of some analytical competence and critical thinking and at least marginally effective organizational and presentational skills. Have limited ability to use data and results to draw appropriate conclusions and use and reference a variety of sources mainly in summary rather than through analysis and comparison.				
	Fail	The student shows little or no evidence of knowledge and learning outcomes, lacks an overall grasp of the subject thinking abilities. Shows little ability to a apply knowled presentation and/or organizational skills. Shows little eviden	area and shows an absence of ige to solve problems and has	analytical and critical poor and ineffective		
Course Type	Lecture-ba	sed course				
Course Teaching	Activities	Details		No. of Hours		
& Learning Activities	Lectures	Details		36		
	Tutorials	atudant a	eminars and exercises	12		
		Self study essay, additional	presentation plus	100		
Assessment Methods	Methods	<u> </u>				
		Details		Weighting in fina		

			course grade (%)
	Assignments		20
	Essay	Including essays and seminars	50
	Examination		30
Required/recommended reading and online materials	Kearey, P and Vine, F.J. Global tectonics (Oxfor Turcotte, D and Schubert, G. Geodynamics (Car Davies, Geoffrey F., Mantle convection for geological description).	mbridge Univ Press, 2002, 2nd ed.)	

EASC4407 Regional ged	ology (6	credits)		Academic Year	2014		
Offering Department	Earth So	ciences		Quota	40		
Course Co-ordinator	Dr J R A	Ali, Earth Sciences (jrali@hku.hk)					
Teachers Involved		Dr J R Ali, Earth Sciences Prof G Zhao, Earth Sciences					
Course Objectives		nine the key events and phenomer g that of Hong Kong.	na associated with the tectoni	c evolution of Eas	t-SE-South Asia,		
Course Contents & Topics	of HK: ig collision evolution Paleopro igneous	Introduction; Tools; China assembly; China origins; Emeishan LIP, SW China; Mesozoic South China; Geology of HK: igneous; HK seds; deep structure; upper-level structure; Philippine Sea Plate-Taiwan; Tibet: India-Asia collision SE Asia (Java orogen, Sumatra orogen, Banda Sea, Molucca Sea, South China Sea); Formation and evolution of Archean crust in the Eastern Block of the North China Craton: Plate tectonics vs. mantle plumes; Paleoproterozoic amalgamation of the North China Craton; Late Mesoproterozoic to early Neoproterozoic igneous events in the Yangtze Block: review of recently proposed models; Supercontinents from Columbia, through Rodinia, to Pangea: records in Chinese blocks.					
Course Learning Outcomes	On succ	essful completion of this course, stu	dents should be able to:				
	evolution 2. Have explain l last 250 3. Carry literature	1. Have an appreciation of the various "tools" that are a commonly used by earth scientists to decipher the evolution of a tectonically complicated region. 2. Have an awareness of the influential (and in some cases conflicting) models that have been proposed to explain how the collage of crustal elements that comprises East-SE-South Asia has been assembled over the last 250 million years, and where the "pieces" may have originated. 3. Carry out an in-depth scientific review (in this case a key geological issue associated with the region) of the literature (particularly hot-of-the-press journal papers and/or chapters in monographs) and to present the findings both orally at a seminar, and as an academic paper.					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in EASC3403 Sedimentary environments or EASC3404 Structural geology or EASC3409 Igneous and metamorphic petrogenesis					
Offer in 2014 - 2015	Y 1	st sem		Examination	Dec		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Thorough grasp of the subject; evidence of strong critical abilities and logical thinking; highly effective organizational and presentational skills; insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly.					
	B Substantial grasp of the subject; evidence of critical abilities and logical thinking; effective organizational and presentational skills; critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly.						
	С	General but incomplete grasp of the subject; evidence of some critical abilities and logical thinking; moderately effective organizational and presentational skills; use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly.					
	D	D Limited grasp of the subject, retention of some relevant information of the subject; evidence of limited critical abilities; limited or barely effective organizational and presentational skills; use and reference of several sources, but mainly through summary rather than analysis and comparison.					
	Fail Little or no grasp of the knowledge and understanding of the subject; little or no evidence of critical abilities and logical / coherent thinking; incoherent organization and poor presentational skills; limited use of secondary sources and no critical comparison of them.						
Course Type	Lecture	with laboratory component course					
Course Teaching	Activiti	ies	Details		No. of Hours		
& Learning Activities	Lecture	es			28		
	Laborat	tory	guided literature sur	veys	20		
	Readin	g / Self study			80		
Assessment Methods and Weighting	Method	ds	Details		eighting in final		
	Assignments						
	Assignr	ments			50		

Offering Department Farth Sciences Quota	EASC4408 Special topics in	Academic Year	2014	
Chemig Department Latin Colonics	Offering Department Earth Sciences		Quota	

Required/recommended reading and online materials	ТВА						
Assessment Methods and Weighting	Methods	5	Deta	ils			Weighting in final course grade (%)
Course Teaching & Learning Activities	Activitie	s		Details			No. of Hours
Course Type	Lecture w	ith laboratory comp	onent	course			
	Fail						
	D						
	С						
	В						
Grade Descriptors	Α						
Course Grade	A+ to F						
Offer in 2015 - 2016	Υ						
Offer in 2014 - 2015	N					Examination	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in a	ny EASC3XXX or E	ASC4	XXX course			
Course Learning Outcomes	TBC						
Course Contents & Topics	TBC						
Course Objectives	TBC						
Teachers Involved	TBC, Ear	TBC, Earth Sciences					
Course Co-ordinator	TBC, Ear	TBC, Earth Sciences ()					

EAGG-1011 Earth System.	contempor	ary issues (6 credits)		Academic Year	2014
Offering Department	Earth Scie	nces		Quota	
Course Co-ordinator	TBC, Eartl	Sciences ()			
Teachers Involved	TBC, Eartl	Sciences			
Course Objectives	the knowled appreciation the global	one experience, this course provides student edge gained in previous courses in Earth Sy on and awareness of the Earth System, the in issues facing Earth scientists, such as chant and preservation of the planet.	ystem Science, terplay between	in order to gain a its component pa	a more in-dep rts, and some
Course Contents & Topics		as an integrated system; the interactions betarth's climate; feedback mechanisms; natural			ne evolution ar
Course Learning Outcomes	On succes	sful completion of this course, students should	d be able to:		
	Underst Synthes particularly	hend in some depth the nature of the issues cand the basis of interrelationships through fee ize scientific data available from a variety of in areas of contemporary concern. and how past and present activities on the pla	dback loops with f sources and a	nin the Earth Syste pply the data to p	em.
Pre-requisites (and Co-requisites and Impermissible combination)	EASC4XX Hydrogeol	least 24 credits of advanced level compuls X) in the Earth System Science Major includin ogy or EASC3415 Meteorology or ENVS3313 one course is for Earth System Science Major	ng at least two of Environmental o	the following cou	
Offer in 2014 - 2015	N			Examination	
Offer in 2015 - 2016	Υ				
	Y A+ to F				
Course Grade	-	Demonstrate thorough mastery at an advanced level the course learning outcomes. Show strong analytica original thought, and ability to synthesize and apply ki situations. Demonstrate critical use of data, literature conclusions. Apply highly effective organizational and p	al and critical abilition and critical abilition of a wide reviews, and other s	es and logical thinking range of complex, fan	g, with evidence on the control of t
Course Grade	A+ to F	the course learning outcomes. Show strong analytical original thought, and ability to synthesize and apply known situations. Demonstrate critical use of data, literature of the course learning outcomes.	al and critical abilition nowledge to a wide reviews, and other some sentational skills. The kills and skills and critical and critical ame unfamiliar situal	es and logical thinking range of complex, fan sources to draw appro- kills required for attain bilities and logical thir tions. Demonstrate of	g, with evidence on niliar and unfamiliar priate and insightf ing at least most nking, and ability prrect use of data
Offer in 2015 - 2016 Course Grade Grade Descriptors	A+ to F	the course learning outcomes. Show strong analytical original thought, and ability to synthesize and apply king situations. Demonstrate critical use of data, literature conclusions. Apply highly effective organizational and properties of the course learning outcomes. Show evidence of analythesize and apply knowledge to familiar and so literature reviews, and other sources to draw apply	al and critical abilitinowledge to a wide reviews, and other some some and state of the	es and logical thinking range of complex, far sources to draw approximates and logical thin tions. Demonstrate cons. Apply effective consequence of a transitional properties of the constitution of the consequence of the co	g, with evidence of the priate and unsightful priate and insightful ing at least most whing, and ability the precision of the course to the course of the course of the course ing, and ability the erroneous use

	Show limited ability to synthesize and apply knowledge to solve problems. Demonstrate limited ability to use of da literature reviews, and other sources to draw appropriate conclusions. Apply limited or barely effective organizatio and presentational skills.				
	outco synth	wledge and skills required for at ical and coherent thinking. Show Demonstrate misuse of data, lit Organization and presentational	v very little or no ability to erature reviews, and other		
Course Type	Laboratory and w	orkshop course			
Course Teaching & Learning Activities	Activities		Detail	s	No. of Hours
& Learning Activities	Lecture				8
	Project work				40
	Tutorials				20
	Reading / Self study				60
Assessment Methods and Weighting	Methods		Detail	s	Weighting in final course grade (%)
	Laboratory reports		progre	ess reports	20
	Presentation				20
	Project reports				30
	Test		oral preser	examination (on ntation)	30
Required/recommended reading and online materials	TBC				

EASC4955 Integrated f	ield studi	ies (6 cred	ts)		Academic Year	2014	
Offering Department	Earth Sc	ciences			Quota		
Course Co-ordinator	Dr J King	Dr J King, Earth Sciences (jessking@hku.hk)					
Teachers Involved	Dr J King	ıg, Earth Scie	ences				
Course Objectives	techniqu	ues and 2) or rseas localit	gical field camp are to provice opportunities to study at first-ly. The course requires into	nand areas of particula	r geological interest	and importance of	
Course Contents & Topics	Geologic rocks an	Students will visit an area of geological interest and will undertake independent and group mapping and problem solving exercises in the area. The scope of study includes: Geological setting and stratigraphy, tectonic evolution structural geology, petrography and petrogenesis of ocks and minerals, economic deposits and geomorphology of the area. Gudents will undertake field mapping of an area in small groups.					
Course Learning Outcomes		•	etion of this course, students		model of tectonic ev	olution.	
Pre-requisites (and Co-requisites and Impermissible combination)	EASC4X geology,	XXX) in the , EASC3409	credits of advanced leve Geology Major including E. Igneous and metamorphic pe is for Geology Major studer	ASC3403 Sedimentary etrogenesis.			
Offer in 2014 - 2015	Y 2r	nd sem			Examination	No Exam	
Offer in 2015 - 2016	Y						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Apply highly fieldwork skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Apply effective fieldwork skills and techniques. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Apply moderately effective fieldwork skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply partially effective fieldwork skills and techniques. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.						
	Fail	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Apply minimally effective or ineffective fieldwork skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Field car	mps					

& Learning Activities	Activities	Details	No. of Hours
	Lectures	3 sessions x 1 hour	3
	Field work		48
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Report		100

EASC4966 Earth sciences	internship	o (6 credits)		Academic Year	2014	
Offering Department	Earth Scien	nces		Quota		
Course Co-ordinator	Dr P Y Tam	Dr P Y Tam, Earth Sciences (ttpy2002@hku.hk)				
Teachers Involved	Dr P Y Tam	Or P Y Tam, Earth Sciences				
Course Objectives	major of stu knowledge	This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefits to the students to apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the School/Departments.				
Course Contents & Topics	or various t (2) Outside student will member of	1) Within the university: The student will be supervised by a staff member (Supervisor), working on a project or various tasks as instructed by the Supervisor. 2) Outside the university: The student will work in an external agency related to the major of study. The student will be supervised under a staff member of the external agency (the External Supervisor) and a staff member of the Department/School of the student (the Internal Supervisor). The work to be performed by the student will normally be instructed by the External Supervisor, with prior agreement of the Internal Supervisor.				
Course Learning Outcomes	1. Gain at le 2. Acquire a	On successful completion of this course, students should be able to: 1. Gain at least 4 weeks of work experience in a geosciences-related firm or the Government. 2. Acquire an understanding and appreciation of the real work environment. 3. Have some experience with applying learned knowledge to solving real world problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	Students ar	Pass in at least 24 credits of advanced level earth sciences courses (EASC3XXX or EASC4XXX). Students are expected to have satisfactorily completed their Year 3 study. This course is not a capstone course and students cannot use this course to fulfill the capstone requirem of the Earth System Science and Geology Majors.				
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam	
Offer in 2015 - 2016	Υ					
Course Grade	Pass/Fail					
Grade Descriptors	Pass Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work required in the job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s), colleagues, and clients in the job. Successfully fulfills the requirements set out in the Course Description regarding working hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating excellent performance in the above would be awarded a grade of "Distinction".					
	Fail Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the job or assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s), other colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding working hours, written and oral report, or evaluation by supervisor(s), etc.					
Course Type	Internship					
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	it is expected that students Internship work work at least 160 hours (or equivalent of 4 weeks full-times)		hours (or the	160		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Written report		written report, feedback and oral	employer's presentation	100	
Additional Course Information	those who I This course this course Enrolment through the	Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given those who have completed Year 2. This course will be assessed on "Pass, Fail and Distinction" basis. Students who are interested to enrol in this course should contact the Department to obtain the approval. Enrolment of this course is not conducted via the online course selection system and should be made through the relevant Department/School office after approval has been obtained from the course coordinator.				

EASC4999 Earth sciences project (12 credits) Academic		Academic Year	2014		
Offering Department	Earth Sciences	Quota			
Course Co-ordinator	Prof M Sun, Earth Sciences (minsun@hku.hk)				
Teachers Involved	TBC, Earth Sciences				

Course Objectives		To enhance the student's knowledge, ability and interest in advanced studies in the Earth Sciences by providing the student with an opportunity to be engaged in an advanced research project.					
Course Contents & Topics	member. and designole in the	The student undertakes a research project in the form of a senior thesis under the supervision of a staff member. The project could be based on a particular component of a staff member's research or one proposed and designed by the student. The student must involve in the project in a non-trivial manner, and play a major role in the project formulation, data collection and analysis, and presentation. The project should contain an element of originality.					
Course Learning Outcomes	 Acqui independ Select thinking. 	On successful completion of this course, students should be able to: 1. Acquire first-hand research experience in earth sciences by doing an individual research project independently under the supervision of a supervisor. 2. Select research topics, design research path, choose research technology, and more importantly use critical					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in at least 24 credits of advanced level earth sciences courses (EASC3XXX or EASC4XXX); and cumulative GPA of 2.7 or above.					
Offer in 2014 - 2015	N	Exan	nination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and creative thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of first-hand data and results to draw insightful conclusions and solve problems. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable creative thinking and additional work beyond that is required in wider areas relevant to the topic.]					
	В	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and creative thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of first-hand data of results to draw appropriate conclusions to draw insightful conclusions and solve problems. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and creative thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of first-hand data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use first-hand data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.						
		coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limited	strate use and of ability to use	Evidence of some reference of several first-hand data and			
	Fail	coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limited	strate use and of ability to use all and presentation subject. Evider of sources and no	Evidence of some reference of several first-hand data and onal skills.			
Course Type	Fail	coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limited results to draw appropriate conclusions. Apply limited or barely effective organizationa Demonstrate evidence of little or no grasp of the knowledge and understanding of the analytical and critical abilities, logical and coherent thinking. Limited use of secondary of them. Misuse of first-hand data and results and/or unable to draw appropria	strate use and of ability to use all and presentation subject. Evider of sources and no	Evidence of some reference of several first-hand data and onal skills.			
Course Teaching	Fail	coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limiter results to draw appropriate conclusions. Apply limited or barely effective organizationa Demonstrate evidence of little or no grasp of the knowledge and understanding of the analytical and critical abilities, logical and coherent thinking. Limited use of secondary of them. Misuse of first-hand data and results and/or unable to draw appropria presentational skills are minimally effective or ineffective.	strate use and of ability to use all and presentation subject. Evider of sources and no	Evidence of some reference of several first-hand data and onal skills.			
Course Type Course Teaching & Learning Activities	Fail Project-b Activitie	coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limiter results to draw appropriate conclusions. Apply limited or barely effective organizationa Demonstrate evidence of little or no grasp of the knowledge and understanding of the analytical and critical abilities, logical and coherent thinking. Limited use of secondary of them. Misuse of first-hand data and results and/or unable to draw appropria presentational skills are minimally effective or ineffective.	strate use and d ability to use all and presentati e subject. Evider sources and nate conclusions	Evidence of some reference of several first-hand data and onal skills. The confirmation of the conf			
	Fail Project-b Activitie	coherent and logical thinking, but with limited analytical and critical abilities. Demons sources, but mainly through summary rather than analysis and comparison. Limiter results to draw appropriate conclusions. Apply limited or barely effective organizationa Demonstrate evidence of little or no grasp of the knowledge and understanding of the analytical and critical abilities, logical and coherent thinking. Limited use of secondary of them. Misuse of first-hand data and results and/or unable to draw appropria presentational skills are minimally effective or ineffective. Pased course Details The Student is expected to at least 240 hours on the pase.	strate use and d ability to use and d ability to use and all and presentati e subject. Evider sources and nate conclusions spend project	Evidence of some reference of several first-hand data and onal skills. Ince of little or lack of o critical comparison. Organization and No. of Hours			

		2014				
Earth Sciences	Quota					
Dr C Dingle, Earth Sciences (cdingle @hku.hk)						
Dr C Dingle, Earth Sciences						
To provide students with an inter-disciplinary introduction to Environmental Science with key questions to highlight the interconnections between biological, geological and chemical processes. To convey the basic science behind environmental interactions and place it within the context of human impacts and dependence on the natural world. To better understand how humans interact, manage and sustain the environment within the context of our economies, governments and individual choices.						
The teaching and learning will be organized around key issues: application of science to solve environmental problems; human population growth as the underlying environmental problem; ways to restore damaged ecosystems; the appropriate use and misuse of forest and wildlife; the problems in feeding the world without destroying the environment; the difficulty in assuring a sustainable supply of energy; ways to maintain water resources for future generations; our contribution to global climate change; problem of air pollution in cities; waste management; the reasons for natural hazards becoming disasters						
discuss the impact of human society on the environment. 2. Explain the concept of environmental sustainability, give examples of how soci achieve sustainability.						
	Dr C Dingle, Earth Sciences (cdingle@hku.hk) Dr C Dingle, Earth Sciences To provide students with an inter-disciplinary introduction to Envirohighlight the interconnections between biological, geological and characteristic to convey the basic science behind environmental interactions an impacts and dependence on the natural world. To better understand how humans interact, manage and sustain the economies, governments and individual choices. The teaching and learning will be organized around key issuenvironmental problems; human population growth as the under restore damaged ecosystems; the appropriate use and misused feeding the world without destroying the environment; the difficult energy; ways to maintain water resources for future generations; ou problem of air pollution in cities; waste management; the reasons and catastrophes; prices on scenic beauty; ways to plans, and achied. On successful completion of this course, students should be able to 1. Explain and describe connections between the physical and be discuss the impact of human society on the environment. 2. Explain the concept of environmental sustainability, give example achieve sustainability.	Dr C Dingle, Earth Sciences To provide students with an inter-disciplinary introduction to Environmental Science with highlight the interconnections between biological, geological and chemical processes. To convey the basic science behind environmental interactions and place it within the compacts and dependence on the natural world. To better understand how humans interact, manage and sustain the environment within the economies, governments and individual choices. The teaching and learning will be organized around key issues: application of sciency incompacts and every environmental problems; human population growth as the underlying environmental prestore damaged ecosystems; the appropriate use and misuse of forest and wildlife; feeding the world without destroying the environment; the difficulty in assuring a sustainergy; ways to maintain water resources for future generations; our contribution to global problem of air pollution in cities; waste management; the reasons for natural hazards be and catastrophes; prices on scenic beauty; ways to plans, and achieve, a sustainable environments. On successful completion of this course, students should be able to: 1. Explain and describe connections between the physical and biological stresses in the discuss the impact of human society on the environment. 2. Explain the concept of environmental sustainability, give examples of how society can also accept the province of the society of the environment.				

Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F	A+ to F				
Grade Descriptors	Α	Demonstrate thorough understanding of the subject and an ability to apply knowledge gained in class to a wide range of complex, familiar and unfamiliar situations. Show evidence of logical thinking and some original thought. Coursework completed on time and to a high academic standard.				
	В	Demonstrate a good understanding of the su situations. Show evidence of logical thinking standard.				
	С	Demonstrate general but incomplete understanding of the subject and an ability to apply knowledge to most familiar situations. Show some evidence of logical thinking, but with some inconsistencies. Some coursework incomplete, but submitted on time and in an adequate academic standard.				
	D	Demonstrate partial but limited grasp of the subject and a limited ability to apply knowledge to some familiar situations. Show only able to apply knowledge to simple examples. Show little evidence of logical thinking. Coursework submitted late to a poor standard.				
	Fail	Demonstrate little or no understanding of the subject and very little or no ability to apply knowledge to familiar situations. Show no evidence of logical or coherent thinking. Coursework missing or substandard.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				24	
	Tutorials		group discussion debate	and class	24	
	Field worl	<	a one-day field trip		8	
	Reading / Self study				112	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents			50	
	Examination				50	
Required/recommended reading and online materials		ng in the Environment (Thomson, 2007 Botkin: Essential Environmental Scien				

ENVS3004 Environment, s	ociety and	economics (6 credits)	Academic Year	2014				
Offering Department	Earth Scie	ences	Quota					
Course Co-ordinator	Prof Y Q 2	Zong, Earth Sciences (yqzong@hku.hk)						
Teachers Involved	Prof Y Q 2	Prof Y Q Zong, Earth Sciences						
Course Objectives	rural and pollutants and conc Students	This course follows up issues highlighted in the introductory course and provides in-depth studies about rural and urban environments for students to examine the problems of resource scarcity and accumulating pollutants which human society is confronted. The course will focus on specific environmental problems and concepts of Environmental Economics for resource management and environmental protection. Students will analyze the nature of key natural resources such as land, air and water, and explore ways to improve resource management, protect the environment and develop sustainable economies.						
Course Contents & Topics	Basic con Resourse Managem	Valuing the environment Basic concepts of Environmental Economics Resourse management for energy, land, water and air Management of waste Planning and regulations for a sustainable future						
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge and critical understanding of the complexity and interconnectedness between human society and the natural environment. 2. Recognise appropriate use and misuse of natural resources, and 3. assess economic solutions and policies for solving environmental problems.							
Pre-requisites (and Co-requisites and Impermissible combination)		HEM2041 Principles of chemistry or EASC2404 In 1 Environmental field and lab course or ENVS2002						
Offer in 2014 - 2015	Y 2nd	sem	Examination	May				
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F							
Grade Descriptors	A Demonstrate thorough mastery of the course material. Show strong ability for analytical, critical and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Demonstrate highly effective organizational and presentational skills.							
	B Demonstrate substantial command of the course material and an ability to apply knowledge to familiar and some unfamiliar situations. Show evidence of analytical, critical thought to some complex issues. Apply effective organizational and presentational skills.							

	С	Demonstrate general but incomplete command of the course material and an ability to apply familiar situations. Show evidence of some critical and logical thinking abilities. Apply morganizational and presentational skills.				
	D		rent and logical thinking, but with lin	nited ability to apply knowledge to solve nited analytical and critical abilities. Apply		
	Fail	Demonstrate little or no evidence of command of course material with very little or no ability to apply know solve problems. Lack of critical thinking abilities and incoherent thinking. Organization and presentational minimally effective or ineffective.				
Course Type	Lecture-l	based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Essay			50		
	Examination			50		
Required/recommended reading and online materials	Keller an Kaufman	Tietenberg and Lewis: Environmental economics and policy Keller and Botkin: Essential Environmental Science (John Wiley & Sons, 2008) Kaufmann and Cleveland: Environmental Science (Amazon, 2008) Middleton N.: The Global Casino: An Introduction to Environmental Issues (Arnold, 1999)				
Additional Course Information		course code: ENVS2004 cory to 4-year students				

ENVS3007 Natural hazard	is and mitig	jation (6 credits)		Academic Year	2014		
Offering Department	Earth Scient	ences		Quota			
Course Co-ordinator	Prof Y Q 2	Zong, Earth Sciences (yqzong@hku.hk)				
Teachers Involved	Prof Y Q Z	Zong, Earth Sciences					
Course Objectives	and flood, not entire developin	This course introduces students the mechanisms of major natural hazards including earthquake, storm and flood, landslide and tsunami. The teaching emphasizes the fundamental concepts: natural hazards are not entirely natural, and understanding the frequency and processes of these hazards is essential in developing prevention, protection and mitigation measures. With case studies, the course will help students explore the political, economical and engineering means of dealing with natural hazards.					
Course Contents & Topics	Geologica Climatic h Preparedr Risk asse	Key characteristics of natural hazards Geological hazards and mitigation measures Climatic hazards and mitigation measures Preparedness and responses to large natural disasters Risk assessment and disaster management Financial (insurance) instruments for economic recovery					
Course Learning Outcomes	understan	ssful completion of this course, studer ding of the key characteristics of majories used to protect lives and properties	r natural hazards, the				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in EASC2401 Fluid/solid interactions in earth processes or ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis					
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec		
Offer in 2015 - 2016	N						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough mastery of the course material. Show strong ability for analytical, critical and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Demonstrate highly effective organizational and presentational skills.						
	В	B Demonstrate substantial command of the course material and an ability to apply knowledge to familiar and some unfamiliar situations. Show evidence of analytical, critical thought to some complex issues. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of the course material and an ability to apply knowledge to most familiar situations. Show evidence of some critical and logical thinking abilities. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited command of the course material and a limited ability to apply knowledge to solve problems. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Apply limited or barely effective organizational and presentational skills.						
	Fail Demonstrate little or no evidence of command of course material with very little or no ability to apply knowledge to solve problems. Lack of critical thinking abilities and incoherent thinking. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Lecture-b	ased course					
Course Teaching	Activitie	s	Details		No. of Hours		
& Learning Activities	Lectures				36		

	Tutorials	Project tutorials	8			
	Discussion	Group discussion	16			
	Reading / Self study		100			
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)			
	Examination		50			
	Project reports		50			
Required/recommended reading and online materials	Bryant E.: Natural Hazards (Cambridge University Press, 2005)					
Additional Course Information	Previous course code: ENVS2007	Previous course code: ENVS2007				

ENVS3313 Environmental	oceanogra	apny (6 creaits)	Acade	mic Year	2014	
Offering Department	Earth Scient	ences	Quota			
Course Co-ordinator	Dr S C Ch	nang, Earth Sciences <i>(suchin</i> @ <i>hku.h</i>	k)			
Teachers Involved	Prof Y Q	Dr S C Chang, Earth Sciences Prof Y Q Zong, Earth Sciences Dr D M Baker, School of Biological Sciences				
Course Objectives	highlight conditions To conve	To provide students with a thorough introduction to coastal and ocean processes with key questions to highlight the importance of the (paleo)oceanographic processes to environmental and ecological conditions. To convey the basic science behind ocean-atmosphere and ocean-biosphere interactions and place it within the context of human's connectedness to the physical world.				
Course Contents & Topics	and their contain 9 properties system in specifical	To provide a solid foundation of knowledge about the physical processes dictating the oceans movements and their impacts on the environment and ecosystems. The oceans take up 71% of earth's surface and contain 98% of the water. By looking at the structure of the atmosphere, thermodynamic principals and properties governing sea water, we will evaluate the critical roles the ocean plays in the environmental system including its influence on (paleo)climate, coastal resources, and nutrient cycling. Case studies specifically examining changes in sea level rise, El Nino, and (paleo)climate will be used to connect oceanographic principles to environmental problems.				
Course Learning Outcomes	On succe	ssful completion of this course, stude	ents should be able to:			
	 Identify transport. Describ 	 Describe the major surface and deep currents of the ocean. Identify and describe important processes in the ocean controlling large scale circulation and nutrie transport. Describe sources and distribution of critical chemicals and sea water properties in the ocean. Illustrate connections between physical ocean processes, climate systems and biological activity. 				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in ENVS2001 Environmental field and lab course or ENVS2002 Environmental data analysis of BIOL2306 Ecology and evolution or EASC2404 Introduction to atmosphere and hydrosphere				
Offer in 2014 - 2015	Y 2nd	d sem	Exami	nation	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining the entire course learning outcomes. Show ability to think logically and critically, with evidence of original thought. Critically evaluate data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of logical and critical thought. Apply effective organizational and presentational skills. Correctly use of data and results to draw appropriate conclusions.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some logical and critical thinking. Apply moderately effective organizational and presentational skills. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited critical abilities. Apply limited or barely effective organizational and presentational skills. Limited ability to use data and results to draw appropriate conclusions.					
	Fail	Demonstrate little or no evidence of com outcomes. Lack of critical, logical and/or effective or ineffective. Misuse of data and	coherent thinking. Organization and	presentational	skills are minimally	
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures		12 sessions x 2 hours		24	
	Laborato	ry	5 labs x 2 hours		1(
	Field wo	•	1 day field trip		8	
	Project w		group presentation		12	
		/ Self study	J		96	

Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments	lab report	20		
	Examination	2 hour written final exam	40		
	Presentation group presentation		20		
	Test	2 hour mid-term test	20		
Required/recommended reading and online materials	Beer, 1997. Environmental Oceanography: Second Edition. CRC-Press. Abel and McConnell, 2009. Environmental Oceanography: Topics and Analysis. Jones & Bartlett Publishers. Garrison, 2004. Oceanography: An Invitation to Marine Science. 5th edition. Brooks Cole. Cronin, 2009. Paleoclimates: Understanding Climate Change Past and Present. Columbia University Press.				
Additional Course Information		Course will be offered every alternate year starting from 2013-14. Course will be offered every year starting from 2014-2015 and coordinated by DES.			

ENVS3999 Directed stu	ıdies in er	enviro	onmental science (6 credits)		Academic Year	2014		
Offering Department	Earth So	Science	es		Quota			
Course Co-ordinator	Dr C Din	ingle, E	Earth Sciences (cdingle@hku.hk)					
Teachers Involved	Dr C Din	ingle, E	Earth Sciences					
Course Objectives		enhance students knowledge on a particular topic in environmental science and students self-directed ning and critical thinking skills.						
Course Contents & Topics	material	idents undertake extensive reading on a selected topic guided by a staff member. Reading should cover terial beyond textbooks. Students are required to analyze the material read, formulate their own scientific lument, and present it in written form.						
Course Learning	On succ	n successful completion of this course, students should be able to:						
Outcomes		mplete a research task independently in one or more topical areas of the major. ow competence in formulating their own scientific argument.						
Pre-requisites (and Co-requisites and Impermissible combination)	Major. Cumulat	ative G	st 24 credits of advanced level (level 3 or 4) PA of 2.5 or above in Environmental Science course is for Environmental Science Major	e Major.	e courses in Enviro	nmental Science		
Offer in 2014 - 2015	N	Examination						
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F	A+ to F						
Grade Descriptors	A	Demonstrates excellent understanding of the topic, excellent development of argument, logical analysis and insight into the topic, with evidence of original thought. Insightful use and critical analysis of information drawn from a full range of high quality sources to draw appropriate and insightful conclusions. Presented in high academic standard. Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.						
	В	B Most aspects of the chosen topic were addressed and researched adequately. Demonstrates understanding of most key concepts, evidence of elementary analysis and development of argument. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations. Presented in adequate standard.						
	С	C Demonstrate general but incomplete grasp of the chosen topic. Most aspects of the chosen topic were addressed and researched at a very basic level. Mostly correct but some erroneous use of relevant information from sources, demonstrates mainly description, and shows basic understanding, but lacking depth.						
	D	D Demonstrate partial but limited grasp of the chosen topic, with retention of some relevant information. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited to draw appropriate conclusions from the sources.						
	Fail	Fail Show little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Project-b	-based	course					
Course Teaching	Activiti	Activities Details		tails		No. of Hours		
& Learning Activities	1	Reading / Self study		earch work & rep	oort	120		
Assessment Methods and Weighting	Method	ods	De	tails		eighting in fina ourse grade (%		
	Oral pre	resenta	ation			10		
	Researc	rob ror	oort			90		

ENVS4999 Environmental	Academic Year	2014			
Offering Department	Quota				
Course Co-ordinator	Prof Y Q Zong, Earth Sciences (yqzong @hku.hk)				
Teachers Involved Prof Y Zong, Earth Sciences					

Course Objectives	To enhan	ce students knowledge and research ski	lls in advanced level of	environmental sci	ence.	
Course Contents & Topics	a staff me	Students undertake a research project in the form of an undergraduate dissertation under the supervision of a staff member. The project could be based on one of the four areas covered by the major and must show elements of interdisciplinary nature. The dissertation should show an element of originality and the research in a non-trivial manner.				
Course Learning Outcomes	On succe	successful completion of this course, students should be able to:				
		ete a dissertation project of undergraduat competence in formulation, data collection				
Pre-requisites (and Co-requisites and Impermissible combination)	Science I	Pass in at least 24 credits of advanced level (level 3 or 4) compulsory/core courses in Environmental science Major; and Students must have a cumulative GPA of 3.0 or above in Environmental Science Major. This capstone course is for Environmental Science Major students only.				
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrates excellent understanding of the topic, excellent development of argument, logical analysis and insight into the topic, with evidence of original thought. Insightful use and critical analysis of information drawn from a full range of high quality sources to draw appropriate and insightful conclusions. Presented in high academic standard. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.]					
	B Most aspects of the chosen topic were addressed and researched adequately. Demonstrates understanding of most key concepts, evidence of elementary analysis and development of argument. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations. Presented in adequate standard.					
	C Demonstrate general but incomplete grasp of the chosen topic. Most aspects of the chosen topic were addressed and researched at a very basic level. Mostly correct but some erroneous use of relevant information from sources, demonstrates mainly description, and shows basic understanding, but lacking depth.					
	Demonstrate partial but limited grasp of the chosen topic, with retention of some relevant information. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited to draw appropriate conclusions from the sources.					
	Fail Show little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Project-b	ased course				
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Reading	/ Self study	research work & rep	ort	240	
Assessment Methods and Weighting	Methods	S	Details		Veighting in final course grade (%)	
	Disserta	tion			100	
Additional Course Information		course code: ENVS3015. from major coordinator is required.	·	'		

MATH1011 University mat				cademic Year	2014	
Offering Department	Mathemati	CS	C	luota		
Course Co-ordinator		v, Mathematics (lawkaho@maths.h.	ku.hk)			
Teachers Involved		v, Mathematics				
Course Objectives	them with	e aims at students with only HKC basic knowledge of mathematics th o be followed by MATH1013 Univer	nat serves as essential for			
Course Contents & Topics	- Permutat - Mathema - Exponem - Trigonom - Limits of - Derivative - Differenti - Maxima a - Indefinite - Area - Integratio	- Sets, Venn diagram, set operations - Permutations, combinations and elementary probabilities - Mathematical induction - Exponential and logarithmic functions - Trigonometric functions, trigonometric formulae - Limits of algebraic, exponential and logarithmic functions - Derivatives of algebraic, exponential and logarithmic functions - Differentiation rules: addition, product, quotient and chain rule - Maxima and minima - Indefinite and definite integrals - Area - Integration by substitution - Trapezoidal rule with error estimation				
Course Learning Outcomes	1. Use the 2. Solve pr 3. Evaluate 4. Comput	On successful completion of this course, students should be able to: 1. Use the set notations; calculate probabilities; and prove by induction. 2. Solve problems involving exponential, logarithmic and trigonometric functions. 3. Evaluate limits and derivatives. 4. Compute simple definite and indefinite integrals. 5. Solve practical problems such as determining maxima and minima; finding area.				
Pre-requisites (and Co-requisites and Impermissible combination)	The course has no pre-requisite, but students are expected to have achieved Level 2 or above in HKDSE Mathematics or equivalent before enrolling the course; and Not for students with Level 2 or above in Module 1 or Module 2 of HKDSE Mathematics or equivalent.					
Offer in 2014 - 2015	Y 1st	sem 2nd sem	E	xamination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	В	theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
		and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate under applications, or not being able to complete		to identify appropria	te theorems or their	
Course Type	Lecture-ba	sed course				
Course Teaching & Learning Activities	Activities		Details		No. of Hours	
	Lectures				36	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%)	
	Assignme	ents	assignments, tu participation, etc	itorials,	5	
	Examination				50	
	Test		3 tests		45	
Required/recommended reading and online materials	To be deci	ded				
Course Website	http://hkum	nath.hku.hk/course/MATH1011/				

MATH1013 University mat	Academic Year	2014	
Offering Department	Mathematics	Quota	650
Course Co-ordinator	Dr Y M Chan (1st sem); Prof J H Lu (2nd sem), Mati jhlu@maths.hku.hk)	hematics (ymchan	@maths.hku.hk;

Teachers Involved		han (1st sem), Mathematics Lu (2nd sem), Mathematics				
Course Objectives	backgrous applied in concepts	This course aims at students with Core Mathematics plus Module 1 or Core Mathematics plus Module 2 background and provides them with basic knowledge of calculus and some linear algebra that can be applied in various disciplines. It is expected to be followed by courses such as MATH2012 (Fundamental concepts of mathematics), MATH2101 (Linear Algebra I), MATH2102 (Linear Algebra II), MATH2211 (Multivariable calculus), and MATH2241 (Introduction to mathematical analysis).				
Course Contents & Topics	- Limits, c - Mean va - Higher o - Radian, - Imprope - Complex - Basic ma	ns; graphs; inverse functions continuity and differentiability alue theorem; implicit differentiation; Lorder derivatives, maxima and minima calculus of trigonometric functions ir integrals, partial fractions, integratic numbers, polar form, de Moivre's foatrix and vector (of order 2 and 3) oper ordinary differential equations	a, graph sketching on by parts rmula			
Course Learning Outcomes	On succe	ssful completion of this course, stude	ents should be able to:			
	2. Evaluat 3. Apply a sketch gra 4. Solve p 5. Perforn	be properties of a function and an involute various kinds of limits, and determined various kinds of limits, and determined various of different aphs of functions. Toroblems involving complex numbers, and vector operations, composimple first order ordinary differential of	ine continuity and diffe tiation and integration ute determinants.			
Pre-requisites (and Co-requisites and (mpermissible combination)	fulfill this i Not for s (MATH18	r above in Module 1, or Module 2 o requirement are advised to take MAT students who have passed MATH 51 Calculus and ordinary differentia or have already enrolled in this cours	H1011 University mat 1821 Mathematical r I equations and MATI	hematics I; and methods for actuar	ial science I, or	
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	В	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems. Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying				
	С	Demonstrate an acceptable understanding theorems, but with some inadequacies in	the appropriate theorems or their applications and presentation or with some minor computational errors. Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor			
	D	argument and presentation or a number of minor computational errors. Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
		poor argument or presentation or with subs		S.	alysing problems with	
	Fail	Demonstrate poor and inadequate unde applications, or not being able to complete	stantial computational errors			
course Type		Demonstrate poor and inadequate unde	stantial computational errors			
Course Teaching		Demonstrate poor and inadequate unde applications, or not being able to complete ased course	stantial computational errors			
Course Teaching	Lecture-b	Demonstrate poor and inadequate unde applications, or not being able to complete ased course	stantial computational errors erstanding by not being al the solution.		te theorems or their	
Course Teaching	Lecture-b	Demonstrate poor and inadequate unde applications, or not being able to complete ased course	stantial computational errors erstanding by not being al the solution.		te theorems or their	
Course Teaching	Lecture-back Activitie Lectures Tutorials	Demonstrate poor and inadequate unde applications, or not being able to complete ased course	stantial computational errors erstanding by not being al the solution.		No. of Hours	
Course Teaching Learning Activities Assessment Methods	Lecture-back Activitie Lectures Tutorials	Demonstrate poor and inadequate unde applications, or not being able to complete ased course S / Self study	stantial computational errors erstanding by not being al the solution.	ole to identify appropria	No. of Hours	
Course Teaching Learning Activities Assessment Methods	Lecture-backers Activitie Lectures Tutorials Reading	Demonstrate poor and inadequate unde applications, or not being able to complete ased course S / Self study	stantial computational errors erstanding by not being at the solution. Details	ole to identify appropria	No. of Hours 36 12 100 Weighting in final	
Course Teaching Learning Activities Assessment Methods	Lecture-backers Activitie Lectures Tutorials Reading Methods	Demonstrate poor and inadequate unde applications, or not being able to complete ased course s / Self study	stantial computational errors erstanding by not being at the solution. Details	ole to identify appropria	No. of Hours No. of Hours 36 12 100 Weighting in final course grade (%)	
Course Teaching & Learning Activities Assessment Methods	Lecture-based Activities Lecturess Tutorials Reading Methods Assignment	Demonstrate poor and inadequate unde applications, or not being able to complete ased course s / Self study	stantial computational errors erstanding by not being at the solution. Details	ole to identify appropria	No. of Hours No. of Hours 36 12 100 Weighting in final course grade (%) 50	
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading and online materials	Lecture-base Activitie Lectures Tutorials Reading Methods Assignme Examina Test Adrian Ba Press, 20 George B	Demonstrate poor and inadequate unde applications, or not being able to complete ased course s / Self study ents tion anner: The Calculus Lifesaver: All the	petails Details Details	Excel at Calculus (Pr	No. of Hours 36 12 100 Weighting in final course grade (%) 50 40	

MATH1641 Mathematical	laboratory and modeling (6 credits)	Academic Year	2014
Offering Department	Mathematics	Quota	20
Course Co-ordinator	TBC, Mathematics ()		
Teachers Involved	TBC, Mathematics		
Course Objectives	This course introduces a powerful and free computer software Sc	ilab for scientific res	earch. The

	Biology, E	ing language will be taught via a r Ecology, Statistics and Management. ebra will also be covered.				
Course Contents & Topics	Scilab. Elementary mathematical modeling, predator-prey models, epidemic models, host-parasite mode etc. Data fitting models and simulation of simple random variable. Random walk models and inventory models. Differentiation and integration of one variable. Elementary linear algebra.					
Course Learning Outcomes	1. Recogn 2. Demon: 3. Write at 4. Solve s	On successful completion of this course, students should be able to: 1. Recognize the importance of numerical methods in mathematical modeling. 2. Demonstrate basic algebraic and arithmetic computations in the Scilab environment. 3. Write and interpret programs in Scilab programming language. 4. Solve simple numerical problems using interactive Scilab commands. 5. Solve moderately complicated numerical problems by writing Scilab programs.				
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and Scilab skills by being able to identify the appropriate Scilab environments and their applications through correctly analysing problems, clearly and efficiently presenting correct algorithms and being able to solve numerical problems by writing Scilab programs carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and Scilab skills by being able to identify the appropriate Scilab environments and their applications through correctly analysing problems, but with some minor inadequacies in identifying the appropriate Scilab components or presenting correct algorithms or with some minor programming/computational errors.					
	С	Demonstrate an acceptable understanding of key concepts and Scilab skills by being able to correctly identify appropriate Scilab environments, but with some inadequacies in solving numerical problems with Scilab through incorrectly analysing problems with inappropriate Scilab environments or with a number of minor programming/computational errors.				
	D	Demonstrate some understanding of key concepts and Scilab skills by being able to correctly identify appropriate Scilab environments, but with substantial inadequacies in solving numerical problems with Scilab through incorrectly analysing problems with inappropriate Scilab environments or with substantial programming/computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate Scilab environments or their applications, or not being able to complete the solution.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	5	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods		Details		eighting in final ourse grade (%)	
	Examinat	ion			50	
	Test				50	
Required/recommended reading and online materials	F. R. Gio	ided by the course instructor. rdano, M. D. Weir, W. P. Fox: A firs ble Thomson Learning, 2003)	st course in mathemati	cal modeling, (Pa	cific Grove, CA:	
		math.hku.hk/course/MATH1641/				

MATH1821 Mathematical	methods for actuarial science I (6 credits)	Academic Year	2014
Offering Department	Mathematics	Quota	
Course Co-ordinator	Dr C W Wong, Mathematics (cwwongab@hku.hk)		
Teachers Involved	Dr C W Wong, Mathematics		
Course Objectives	This course is the first of the two mathematics courses designe a solid background of calculus of one and several variables course focuses on single variable calculus and elementary m Mathematics plus Module 1 or Core Mathematics plus Module 2	and an introduction to linatrix theory. It aims at s	near algebra. The
Course Contents & Topics	 Functions; graphs; inverse functions Limits, continuity and differentiability Mean value theorem; implicit differentiation; L'Hopital's rule Bisection method and Newton's method Higher order derivatives, maxima and minima, graph sketching Taylor approximation and error estimation Improper integrals, partial fractions, integration by parts Numerical integration, Trapezoidal rule and Simpson's rule Basic matrix and vector (of order 2 and 3) operations, determing Simple differential equations 		
Course Learning Outcomes	On successful completion of this course, students should be able	e to:	

	2. Evalua 3. Apply sketch gr 4. Approx 5. Perfori	be properties of a function and an inversite various kinds of limits, and determine advanced rules/techniques of differential aphs of functions. Kimate integrals by numerical methods. In matrix and vector operations, comput simple first and second order ordinary designed.	e continuity and differ ation and integration e determinants.			
Pre-requisites (and Co-requisites and Impermissible combination)	Module 2 Not for s ordinary enrolled i	or above in HKDSE Mathematics plus Mathematics plus Mathematics plus Mathematics who have passed MATH1013 differential equations and MATH1853 In these courses. ActuarSc) students only.	3 University mathema	atics II or (MATH1	1851 Calculus and	
Offer in 2014 - 2015	Y 1s	Y 1st sem Examination Dec				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate an excellent understanding of theorems and their applications through corresponding and argumentation and being at innovative approaches to solving problems.	ectly analysing problems, c	learly and elegantly pr	esenting correct logical	
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-b	pased course				
Course Teaching	Activitie	9S	Details		No. of Hours	
& Learning Activities	Lectures	5			36	
	Tutorials	5			12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)	
	Examina	ation			50	
	Test		2 tests		50	
Required/recommended reading and online materials	(Addison	George B. Thomas; as revised by Maurice D. Weir and Joel Hass: Thomas' Calculus, 12th edition (Addison Wesley) Steven J. Leon: Linear Algebra with Applications (Pearson Prentice Hall)				
Course Website	http://hku	math.hku.hk/course/MATH1821/				

MATH1851 Calculus and o	ordinary differential equations (6 credits)	Academic Year	2014
Offering Department	Mathematics	Quota	560
Course Co-ordinator	Prof K M Tsang (1st sem); Dr Y K Lau (2nd sem), Math yklau @maths.hku.hk)	hematics (kmtsang	@maths.hku.hk;
Teachers Involved	Prof K M Tsang (1st sem), Mathematics Dr Y K Lau (2nd sem), Mathematics Prof K W Chow (1st & 2nd sem), Mechanical Engineering Dr Z Wang (2nd sem), Mechanical Engineering		
Course Objectives	In this course, students will be introduced to some important topics many engineering fields. A concrete foundation of engineering mat engineering subjects will be built. Mathematical concepts and p engineering applications, would be emphasized so that students couls solving engineering problems, and be well prepared in learning a required in different engineering disciplines.	hematics that unde rinciples, as well d enhance their mat	rpins the various as some typical hematical skills i
Course Contents & Topics	Differential and Integral Calculus (Single Variable) Ordinary Differential Equations Laplace Transforms For more information, please refer to http://hkur.MATH1851.description	math.hku.hk/MathW	WW/ucourse.php
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge and understanding of the basic engine relationship with some typical engineering applications. 2. Apply mathematical skills to model and solve some basic engineeri 3. Have a general grasp on the interrelation among mathematical	ng problems.	

	engineerin For mo	Il prepared to cope with a higher of disciplines. ore information, please reference of the control of the cont		mathematics requ	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ma	above in Module 1, or Module 2 of HK ATH1011 University Mathematics I se is exclusively for engineering studer		equivalent, or	
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and methods and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				elegantly presenting ly and correctly, and
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and methods and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems and methods or their applications and presentation or with some minor computational errors.				
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems and methods, but with some inadequacies in applying them through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems and methods, but with substantial inadequacies in applying them through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Demonstrate poor and inadequate understan their applications, and not being able to comp		identify appropriate theor	rems and methods or
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	5	Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods		Details		leighting in final ourse grade (%)
	Examinat	ion			80
	Test 2 tests		2 tests		20
Required/recommended reading and online materials	Introduction	on to Calculus and Ordinary Differential	l Equations (Pearson)	
Course Website	http://hkun	nath.hku.hk/course/MATH1851/			
Additional Course Information	Students a	be no 'make-up' for a missed test or as are not allowed to take MATH1851 and be is offered by the Department of Math	d MATH1853 together	r in the same semes	ter.

MATH1853 Linear algebra	, probability and statistics (6 credits)	Academic Year	2014	
Offering Department	Mathematics	Quota	560	
Course Co-ordinator	Prof W K Ching (1st sem); Dr G Han (2nd sem), Mathematics (wching@hku.hk)			
Teachers Involved	Prof W K Ching (1st sem), Mathematics Dr G Han (2nd sem), Mathematics Dr N Wong (1st sem), Electrical & Electronic Engineering Dr Y C Wu (2nd sem), Electrical & Electronic Engineering			
Course Objectives	As the consecutive course of MATH1851, students will be commonly applied in engineering so that students could be mathematics underpinned for different engineering subjective concepts, principles, analysis, and their relationship to the could be furnished with the essential mathematical skill to problems to prepare for all the engineering subjects.	be further enhanced with a cts. The course emphasize modelling of engineering sy	concrete skill i es mathematica stems. Student	
Course Contents & Topics	 Vector Algebra; Matrix Algebra; Eigenvalues Problems Elementary Complex Variables Basic Probability Laws; Random Variables, Probability Distribution; Normal Distribution; Normal Distribution; Normal Distribution; Normal Distribution, Point Estimates and Confidence Interfor more information, please refer to head MATH1853.description 	ribution		
Course Learning Outcomes	On successful completion of this course, students should be 1. Demonstrate knowledge and understanding of the essen relationship to the engineering problems in general. 2. Model an engineering problem into a mathematical form algebraic equation, a differential equation, a graph, or some of the course of the	itial engineering mathematic	which can be a	

	4. Have a problem. For me	ne model by selecting and applying a subsequence grasp on the interrelation and ore information, please refluences.	mong mathematical		the engineering
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MA	above in Module 1, or Module 2 of HKI ATH1011 University Mathematics I se is exclusively for Engineering studer		equivalent, or	
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate an excellent understanding of theorems and methods and their applications correct logical reasoning and argumentation with some innovative approaches to solving p	through correctly analysis and being able to carry of	ng problems, clearly and	d elegantly presenting
	В	Demonstrate a good understanding of key cor methods and their applications through co arguments, identifying the appropriate theore minor computational errors.	rrectly analysing problen	ns, but with some mi	nor inadequacies in
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems and methods, but with some inadequacies in applying them through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems and methods, but with substantial inadequacies in applying them through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Demonstrate poor and inadequate understand their applications, or not being able to complete		dentify appropriate theo	rems and methods or
Course Type	Lecture-ba	sed course			
Course Teaching	Activities Details		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading /	Self study			100
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)
	Assignme	ents			20
	Examinati	ion			80
Required/recommended reading and online materials	D.C. Lay: Linear Algebra and its Applications (Addison-Wesley, 2012, 4th ed.) S.J. Leon: Linear Algebra with Applications (Pearson Education, 2006, 7th ed.) G. James, et al.: Modern Engineering Mathematics (Pearson Education, 2008, 4th ed.) C. Rorres and H. Anton: Applications of Linear Algebra (Wiley, 1984, 3rd ed.) E. Kreyzig: Advanced Engineering Mathematics (Wiley, 2006, 9th ed.)				
Course Website	http://hkum	nath.hku.hk/course/MATH1853/			
Additional Course Information	Students a	be no 'make-up' for a missed quiz or as are not allowed to take MATH1851 and e is offered by the Department of Math	MATH1853 together	in the same semes	ster.

concepts of mathematics (6 credits)	Academic Year	2014
Mathematics	Quota	
Dr Y M Chan, Mathematics (ymchan@maths.hku.hk,)	
Dr Y M Chan, Mathematics		
mathematical proofs. Such concepts and methods a	are important for subsequent studies	s in all higher leve
- elementary set theory - statement calculus - mathematical proofs - relations and functions - finite and infinite sets - natural numbers and mathematical induction - axiomatic systems in mathematics - real numbers and the limit of a sequence - examples of groups		
 Understand the definition of a set and apply set the Construct the truth table of a given statement. Apply different proof strategies (e.g. proof by comathematical statement. 	eory in simple daily life problems. ontradiction and mathematical induced leations.	ction) in proving a
	Mathematics Dr Y M Chan, Mathematics (ymchan @maths.hku.hk,) Dr Y M Chan, Mathematics To provide students with solid background on fund mathematical proofs. Such concepts and methods a courses in mathematics. This course can be taken of elementary set theory statement calculus mathematical proofs relations and functions finite and infinite sets natural numbers and mathematical induction axiomatic systems in mathematics real numbers and the limit of a sequence examples of groups On successful completion of this course, students sh 1. Understand the definition of a set and apply set the 2. Construct the truth table of a given statement. 3. Apply different proof strategies (e.g. proof by comathematical statement. 4. Demonstrate the basic properties of equivalence results.	Mathematics Dr Y M Chan, Mathematics (ymchan@maths.hku.hk) Dr Y M Chan, Mathematics To provide students with solid background on fundamental concepts of mathematics mathematical proofs. Such concepts and methods are important for subsequent studies courses in mathematics. This course can be taken concurrently with other Level 2 or about elementary set theory statement calculus mathematical proofs relations and functions finite and infinite sets natural numbers and mathematical induction axiomatic systems in mathematics real numbers and the limit of a sequence examples of groups On successful completion of this course, students should be able to: 1. Understand the definition of a set and apply set theory in simple daily life problems. 2. Construct the truth table of a given statement. 3. Apply different proof strategies (e.g. proof by contradiction and mathematical indumathematical statement. 4. Demonstrate the basic properties of equivalence relations.

	6. Demonstrate the operational properties of groups.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics)				
Offer in 2014 - 2015	Y 1st	st sem 2nd sem Examination Dec			Dec May
Offer in 2015 - 2016	Y				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.			
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.			
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.			
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.			
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-based course				
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Examination				50
	Test				50
Required/recommended reading and online materials	Gray Chartrand, Albert D Polimeni and Ping Zhang: Mathematical Proofs: A Transition to Advanced Mathematics Boston (Pearson/Addison-Wesley, 2008)				
Course Website	http://hkumath.hku.hk/course/MATH2012/				
Additional Course Information	Students with good grades in HKDSE Math Module 1 or Math Module 2 and have strong interests in math may also apply.				

MATH2014 Multivariable of	alculus and linear algebra (6 credits)	Academic Year	2014		
Offering Department	Mathematics	Quota			
Course Co-ordinator	Dr J T Chan, Mathematics (jtchan@hku.hk)	<u>'</u>	'		
Teachers Involved	Dr J T Chan, Mathematics				
Course Objectives	To provide students with a solid foundation in calculus of several variables and linear algebra, which they will need in the study of mathematics related subjects.				
Course Contents & Topics	Vectors and Matrices: Vectors in space, dot product and cross product, determinant Partial Derivatives: Functions of several variables, partial derivatives, extreme formula Multiple Integrals: Double and triple integrals, substitution in multiple integrals Matrix Algebra: Matrix addition and multiplication, system of linear equations Vector spaces: The Euclidean spaces as vector spaces, its subspaces, spadimension Eigenvalues and eigenvectors: Diagonalization and computing powers Numerical Methods: Bisection method and Newton's method for finding roots of earlier of the space of	e values and Lagrange m as a matrix equation of vectors, linear indepen	ultipliers, Taylor		
Course Learning Outcomes	On successful completion of the course, students should be able to:				
	1. Understand the geometric meaning of partial and directional derivatives.				

	 Optimize multivariate objective functions (with/without constraints). Evaluate integrals over curvilinear regions in space. Understand the concept of vector spaces, basis, dimension. Solve simple eigenvalue problems and apply the theory to practical problems. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics). Not for students who have passed MATH2822 Mathematical methods for actuarial science II or ((MATH2101 Linear algebra I or MATH2102 Linear algebra II) and MATH2211 Multivariable calculus), or have already enrolled in these courses.				ial science II or	
Offer in 2014 - 2015	Y 2nd	sem	E	xamination	May	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analyzing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analyzing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analyzing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analyzing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-ba	Lecture-based course				
Course Teaching	Activities	:	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Examination				50	
	Test				50	
Required/recommended reading and online materials	TBC					
Course Website	http://hkumath.hku.hk/course/MATH2014/					
Additional Course Information	Nil					

MATH2101 Linear algebra	I (6 credits)	Academic Year	2014	
Offering Department	Mathematics	Quota		
Course Co-ordinator	Dr K H Law, Mathematics (lawkaho@maths.hku.hk)	'		
Teachers Involved	Dr K H Law, Mathematics			
Course Objectives	This is a first university level course on linear algebra, which aims at introducing to students the basic concept of linear structure through many concrete examples in the Euclidean spaces. The course also enriches students' exposure to mathematical rigor and prepares them for studying more advanced mathematical courses.			
Course Contents & Topics	 Vector Geometry in R^2 and R^3: Revision of addition at lines and planes; and applications to geometry. Matrix Algebra: Matrix addition and multiplication, detern of linear equations as a matrix equation. Systems of Linear Equations: Gauss-Jordan elimination, elementary matrices, matrix inversion. Vector Spaces: Coordinate system in R^n, the Euclidean of vectors, linear independence, basis, dimension, chapplications. Linear Transformations: Definition and examples of linear matrices of linear transformations, kernel and image, isomor 6. Eigenvalue Problem: Eigenvalues and eigenvectors, eigenvalues), applications. Inner Product: Gram-Schmidt process, least square problem. 	elementary row operations, spaces as vector spaces, it nange of basis (computations in R^2 ar transformations in R^1 arphism.	e matrices, system row echelon form s subspaces, spa ional examples), and R^3, standar	
Course Learning Outcomes	On successful completion of this course, students should be 1. Handle matrix operations and use them in some practice 2. Solve systems of linear equations by Gauss-Jordan elin matrices. 3. Understand the concept of vector spaces, basis, dimensional statements.	problems. nination and also compute ir		

	4. Solve	matrix representations of some linear transformations. 4. Solve some simple eigenvalue problems and apply the theory to some practical problems. 5. Solve some minimization problems by the least squares method.				
Pre-requisites (and Co-requisites and Impermissible combination)	and MAT	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics)				
Offer in 2014 - 2015	Y 1s	t sem 2nd sem	Examinat	ion Dec May		
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A	theorems and their applications through	ng of key concepts and ideas by being al correctly analysing problems, clearly and ele ng able to carry out computations carefully ms.	gantly presenting correct logical		
	В	and their applications through correct	key concepts and ideas by being able to ide y analysing problems, but with some mind heir applications and presentation or with som	r inadequacies in arguments,		
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-l	pased course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures	S		36		
	Tutorials	S		12		
	Reading	g / Self study		100		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignn	nents	assignments, tutorials, participation, etc	10		
	Examina	ation		50		
	Test		2 tests	40		
Required/recommended reading and online materials	TBC					

MATH2102 Linear algebra	II (6 credits)	Academic Year	2014		
Offering Department	Mathematics	Quota			
Course Co-ordinator	Dr Y K Lau (1st sem); Dr Z Hua (2nd sem), Mathematics (ykl	au @maths.hku.hk; huazher	ng@maths.hku.hk)		
Teachers Involved	Dr Y K Lau (1st sem), Mathematics Dr Z Hua (2nd sem), Mathematics				
Course Objectives	This is a follow up of the course Linear Algebra I. It aims at introducing the general concept of vecto spaces, subspaces, dimensions, inner product spaces, etc. The course prepares the foundation on linea algebra for students' future study in mathematics and other disciplines. Many examples of applications wibe drawn on different subject areas.				
Course Contents & Topics	 Vector Spaces: Definition and examples, subspaces, ker rank of a matrix, linear independence, basis, dimension. Determinant and its properties. Linear Transformations: matrix representation, change of b. Eigenvalue Problem: Characteristic polynomial, Cayley the eigen-subspaces. Inner Product Spaces: Inner product, Gram-Schmidt orth operators. Diagonalization of Matrices. 	asis. orem,	·		
Course Learning Outcomes	On successful completion of this course, students should be a 1. Identify vector space structures and apply relevant knowled 2. Understand the notion of subspaces and compute basis, d 3. Relate linear transformations with matrices. 4. Solve some eigenvalue problems and apply the theory to s 5. Understand the notion of inner product space and diagona	dge to some practical problemension, etc. ome practical problems.	ems.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH2101 Linear algebra I or MATH2822 Mathemat	ical methods for actuarial s	cience II		
Offer in 2014 - 2015	Y 1st sem 2nd sem	Examination	Dec May		

Offer in 2015 - 2016	Υ						
Course Grade	A+ to F	A+ to F					
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	В	Demonstrate a good understanding of I and their applications through correctly identifying the appropriate theorems or the state of the	y analysing problems, but with son	ne minor inadequacies in arguments,			
	С	theorems, but with some inadequacies	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.						
Course Type	Lecture-	based course					
Course Teaching & Learning Activities	Activities		Details	No. of Hours			
& Learning Activities	Lectures			36			
	Tutorials			12			
	Reading / Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Examination			50			
	Test			50			
Required/recommended reading and online materials	TBC						
Course Website	http://hk	umath.hku.hk/course/MATH2102/					

MATH2211 Multivariable c	alculus (6 d	redits)		Academic Year	2014	
Offering Department	Mathemati	cs		Quota		
Course Co-ordinator	Dr Z Hua (1st sem); Dr S P Yung (2nd sem), Mathematics (huazheng@maths.hku.hk; spyung@hku.hk)					
Teachers Involved		1st sem), Mathematics ng (2nd sem), Mathematics				
Course Objectives	solve prace Mathemati finance and in Mathemati mathemati	Students of this course will learn the theory of multivariable calculus and learn how to apply the theory to solve practical problems. This is a required course for students taking major in Mathematics or Mathematics/Physics, and is suitable for all students majoring in sciences, engineering, economics and finance and other students who will use multivariable calculus in their area of study. Students taking minor in Mathematics may take this course as one of the required courses. This course is a pre-requisite of many mathematics courses of more advanced level. Students interested in a theoretical (proof based) approach to single-variable calculus may take MATH2241 Introduction to mathematical analysis.				
Course Contents & Topics	cylindrical, - Differenti gradients - Vector-va del operate - Maxima Lagrange r - Multiple ii - Line integ	vectors in 2-, 3-, and n-dimensionand spherical coordinates ation in several variables: limits lued functions: parametrized curvor and minima: differentials and Thultipliers; applications of extrema tegration: double and triple integrals: scalar and vector line integrals and vector analysis: parals: sand vector analysis: sand vector a	and derivatives; the ches; arc-length; vector field aylor's Theorem of seven als; change of variables; als; Green's Theorem; con	ain rule; directiona ds; gradient, diverge eral variables; extre applications nservative vector fie	I derivatives ence, curl, an ema of functi	and the tions;
Course Learning Outcomes	1. Understa 2. Evaluate 3. Apply th	sful completion of this course, stu and and demonstrate the basic the partial derivatives and multiple ir e knowledge to solve some pract ems involving differentiation and i	eory of calculus of functio stegrals; compute line inte ical problems, such as co	egrals and surface in onstrained optimizations	ntegrals.	s anc
Pre-requisites (and Co-requisites and Impermissible combination)		ATH1013 University mathematics 1853 Linear algebra, probability a		us and ordinary diff	erential equa	ations
Offer in 2014 - 2015	Y 1st s	sem 2nd sem		Examination	Dec May	у
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate an excellent understand theorems and their applications through \$458\$				

		reasoning and argumentation and being a innovative approaches to solving problems.	ble to carry out computations of	carefully and correctly, and with some	
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.			
	С	Demonstrate an acceptable understanding of theorems, but with some inadequacies in a argument and presentation or a number of m	pplying the theorems through in		
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.			
	Fail	Demonstrate poor and inadequate unders applications, or not being able to complete the		identify appropriate theorems or their	
Course Type	Lecture-	based course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments			10	
	Examination			50	
	Test			40	
Required/recommended reading and online materials	Susan J.	Colley: Vector Calculus, 4th edition (Pe	earson, 2011)		
Course Website	http://hku	umath.hku.hk/course/MATH2211/			
Additional Course Information	Students	are assumed to have mastered calculu	is of one-variable prior to t	aking this course.	

MATH2241 Introduction to	mathematic	cal analysis (6 credits)	Academic Year	2014			
Offering Department	Mathematic	s	Quota				
Course Co-ordinator		Dr B Kane (1st sem); Dr Y M Chan (2nd sem), Mathematics (bkane@maths.hku.hk; ymchan@maths.hku.hk)					
Teachers Involved		1st sem), Mathematics n (2nd sem), Mathematics					
Course Objectives	To introduce	e students to the basic ideas and techniques of mathema	tical analysis.				
Course Contents & Topics	completene - Sequence monotone s - Continuity intermediate - Differentia applications - Integratio	- The real number system: the real numbers as an ordered field, supremum and infimum, the completeness axiom, denseness of the rational numbers - Sequences and series of real numbers: limits of sequences, properties of convergent sequences, monotone sequences and Cauchy sequences, subsequences, series, tests of convergence for series - Continuity of real-valued functions: properties of continuous functions, the extreme value theorem, the intermediate value theorem, uniform continuity, limits of functions - Differentiation: properties of differentiable functions, the mean value theorem, Taylor's theorem and its applications - Integration: construction of the Riemann integral using Darboux sums and Riemann sums, the fundamental theorem of calculus					
Course Learning Outcomes	Comphre Demonstrate Sequences/ Elucidate intermediate	ful completion of the course, students should be able to: hend and use abstract mathematical arguments such as trate convergence or non-convergence of a sequence/s series. i important properties of continuous functions such as a value theorem. I the construction of the Riemann integral and its relation	the extreme value	ties of converger			
Pre-requisites (and Co-requisites and Impermissible combination)	and MATH	Pass in MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equation and MATH1853 Linear algebra, probability and statistics) or MATH2822 Mathematical methods for actuarial science II					
Offer in 2014 - 2015	Y 1st se	em 2nd sem	Examination	Dec May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate a thorough mastery of the mathematical notions and proof techniques taught in the course by being able to handle abstract mathematical arguments, to apply appropriate theorems correctly, and to make use of those proof techniques in novel situations. Ability to present solutions clearly and logically, and the use of innovative ideas in solving problems are expected.						
	B Demonstrate a substantial command of the mathematical notions and proof techniques taught in the course by being able to handle abstract mathematical arguments, to apply appropriate theorems correctly, and, with guidance, to make use of those proof techniques in novel situations. Ability to present solutions clearly and logically, and evidence of innovative ideas in solving problems are expected.						
	C Demonstrate a good understanding of the mathematical notions and proof techniques taught in the course by being						

		able to handle abstract mathematical solutions clearly and logically is expect		te theorems correctly. Ability to present			
	D	Demonstrate some understanding of the appropriate theorems for applications a		e course by being able to correctly identify at are leading to complete solutions.			
	Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems for a or not being able to apply the theorems correctly.					
Course Type	Lecture-	based course					
Course Teaching & Learning Activities	Activities		Details	No. of Hours			
a Learning Activities	Lectures			36			
	Tutorials			12			
	Reading / Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Examination			50			
	Test 5						
Required/recommended reading and online materials	Element	Elementary Analysis: The Theory of Calculus, by Kenneth A. Ross, 1980, Springer					
Course Website	http://hk	umath.hku.hk/course/MATH2241/					

MATH2822 Mathematical n	nethods for	actuarial science II (6 credits)	Academic Year	2014			
Offering Department	Mathematic	cs	Quota				
Course Co-ordinator	Dr J T Cha	n, Mathematics (jtchan @hku.hk)					
Teachers Involved	Dr J T Cha	n, Mathematics					
Course Objectives	with a solid	s course is the second of the two mathematics courses designed to provide actuarial science studen in a solid background of calculus of one and several variables and an introduction to linear algebra. The urse focuses on multivariable calculus and linear algebra. It aims at students with MATH1821. It can be lowed by other 2000 or 3000 level mathematics courses.					
Course Contents & Topics	 Eigenvalu Quadratic Vector sp Functions Gradients Taylor ap Maxima a 	rices, systems of linear equations, determinants envalues and eigenvectors, diagonalization of matrices didratic functions and their standard forms tor spaces and subspaces citions of several variables; partial differentiation dients and directional derivatives lor approximation, systems of nonlinear equations, Newton's method cima and minima; Lagrange multipliers ble and triple integrals, areas and volumes					
Course Learning Outcomes	On succes	sful completion of this course, students should be a	ble to:				
	systems of and the rar 2. Understa test for lo	and various topics in linear algebra such as the linear equations, eigenvalues and eigenvectors, diak-nullity theorem. and various topics in functions of several variables cal extrema, Newton's method for solving systematics and the method of Lagrange multipliers, double the service of the	agonalizable matrices, bas including partial differentions of nonlinear equation	sis and dimension ation, the Hessians, vector-valued			
Pre-requisites (and Co-requisites and Impermissible combination)		ATH1821 Mathematical methods for actuarial science ctuarSc) students only.	ee I.				
Offer in 2014 - 2015	Y 2nd	sem	Examination	May			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts theorems and their applications through correctly analysing preasoning and argumentation and being able to carry out innovative approaches to solving problems.	oblems, clearly and elegantly pre	senting correct logica			
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.						
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.						
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.						
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.						
Cauraa Tuna	Lecture-ba	Lecture-based course					
Course Type	Lecture-based course						

& Learning Activities	Activities	Details	No. of Hours
	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		50
	Test	2 tests	50
Required/recommended reading and online materials	George B. Thomas; as revised by (Addison Wesley) Steven J. Leon: Linear Algebra with A		Thomas' Calculus, 12th edition
Course Website	http://hkumath.hku.hk/course/MATH2	822/	

MATH3001 Development	of mathem	atical ideas (6 credits)		Academic Year	2014		
Offering Department	Mathema	atics		Quota			
Course Co-ordinator	Prof W K	Ching, Mathematics (wching@hku.hk)					
Teachers Involved	Prof W K	Ching, Mathematics					
Course Objectives	- To ass human e - To prov	- To acquaint the students with the origin and growth of basic mathematical concepts - To assist the students to gain a deeper insight and broader view of mathematics as a discipline and human endeavour - To provide the students with an opportunity to write on and talk about mathematics, and to engage ir independent study					
Course Contents & Topics	the stude	Selected topics in the development of mathematics from ancient to modern times depending on interest the students and the lecturer, with attention paid to the evolvement of mathematical ideas and the proce of mathematical thinking and problem solving.					
Course Learning Outcomes	1. Unders 2. Recog appreciat 3. Discus	On successful completion of the course, students should be able to: 1. Understand and describe the origin and development of basic mathematical concepts. 2. Recognize and demonstrate the intellectual and the socio-cultural aspects of mathematics, and appreciate mathematics as both an academic discipline and a human endeavour. 3. Discuss, argue, and write about the development of various mathematical concepts and ideas. 4. Engage in independent study on a topic about the history or development of mathematics.					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2211 Multivariable calculus an MATH2241 Introduction to mathematical analysis					
Offer in 2014 - 2015	N			Examination			
Offer in 2015 - 2016	N	N					
Course Grade	A+ to F						
Grade Descriptors	В	evidence of original thought. Critical use of information from sources to draw appropriate and insightful conclusions. Actively engage in and contribute substantially and fruitfully to class discussions. Apply highly effective organizational and presentational skills. B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Correct					
	С	use of information from sources to draw appropriate conclusions. Good participation in class discussions with generally good contributions. Apply effective organizational and presentational skills. C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and					
	logical thinking. Mostly correct but some erroneous use of information from sources to draw appropriate conclusions. Make some but not substantial fruitful contributions to class discussions. Apply moderately effective organizational and presentational skills.						
	D	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Limited ability to use information from sources to draw appropriate conclusions. Contribute only in a limited way to fruitful and meaningful class discussions. Apply limited or barely effective organizational and presentational skills.					
	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Misuse of information from sources and/or unable to draw appropriate conclusions. Make little or no meaningful contributions to class discussions. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Lecture-l	pased course					
Course Teaching	Activitie		Details		No. of Hour		
& Learning Activities	Lectures				3		
	Tutorials				1		
	Reading / Self study				10		
Assessment Methods and Weighting	Method	s	Details		eighting in fina ourse grade (%		
	Method Examina		Details		eighting in fina ourse grade (%		

Required/recommended reading and online materials	To be decided by the course instructor. H. Eves and C.V. Newsom: An Introduction to the Foundations and Fundamental Concepts of Mathematics (Holt, Reinhart and Winston, 1958; 1990, 3rd edition) G. Polya: How to Solve It (Princeton University Press, 1971, 2nd edition) R. Laubenbacher and D. Pengelley: Mathematical Expeditions (Springer-Verlag, 1999) R. Calinger (ed.): Classic of Mathematics (Prentice Hall, preprinted 1995) C. Boyer: A History of Mathematics (Wiley, 1968; 1989, 2nd edition (with V.C. Merzbach)) V. Katz: A History of Mathematics (Harper Collins, 1993)
Course Website	http://hkumath.hku.hk/course/MATH3001/

ATH3002 Mathematics seminar (6 credits)				Academic Year	2014		
Offering Department	Mathematic	cs		Quota	12		
Course Co-ordinator	Dr T W Ng	, Mathematics (ntw@maths.hku.hk)					
Teachers Involved		r T W Ng, Mathematics rof W S Cheung, Mathematics					
Course Objectives	mathemation then make prior to the	his is a seminar style course intended for those who have very strong interests and good ability in athematics. Students will be given book chapters and elementary research articles for private study and en make presentations in front of the whole class. Individual meetings with the instructors will be arrange ior to their presentations. Active participation in all the discussions is expected. The aim of the course is to students learn how to initiate self/independent study in mathematics.					
Course Contents & Topics	Topics cho	sen by the instructors, including chapters	s from books and eler	nentary research a	articles.		
Course Learning Outcomes	On succes	sful completion of the course, students sh	hould be able to:				
	Initiate priv	ate independent study on some interestir	ng mathematical topic	os.			
Pre-requisites (and Co-requisites and Impermissible combination)	Multivariab	IATH2012 Fundamental concepts of male calculus and MATH2241 Introduction to the is for second year BSc students only.)	to mathematical analy		ra I, MATH2211		
Offer in 2014 - 2015	Y 2nd	2nd sem		Examination	May		
Offer in 2015 - 2016	Υ	Υ					
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Actively engage in and contribute substantially and fruitfully to class discussions. Apply highly effective organizational and presentational skills.						
	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Good participation in class discussions with generally good contributions. Apply effective organizational and presentational skills.						
	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Make some but not substantial fruitful contributions to class discussions. Apply moderately effective organizational and presentational skills.						
	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Contribute only in a limited way to fruitful and meaningful class discussions. Apply limited or barely effective organizational and presentational skills.						
	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Make little or no meaningful contributions to class discussions. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Project-bas	sed course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Meeting with supervisor		meeting of the wh two hours each tead		24		
	Reading /	Self study	individual meeting instructors	s with the	24		
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)		
	Research report written examination (30 coursework (70%)		on (30%),	100			
Course Website	http://hkum	ath.hku.hk/course/MATH3002/					
Additional Course Information	Enrollment	needs instructors' approval. This course	is for second year B	Sc students only.			

MATH3301 Algebra I (6	Academic Year	2014			
Offering Department	Mathematics				
Course Co-ordinator	Prof J H Lu, Mathematics (jhlu@maths.hku.hk)	Prof J H Lu, Mathematics (jhlu@maths.hku.hk)			
Teachers Involved	Prof J H Lu, Mathematics	Prof J H Lu, Mathematics			
Course Objectives	This course aims to present those fundamental topics and te applications in mathematics and the applied sciences. It is com Algebra II and Topics in Applied Discrete Mathematics.				

Course Contents & Topics	group hor Rings: ex factorizati Fields: de	Groups: examples of groups, subgroups, cosets, Lagrange theorem, quotient groups, normal subgroups group homomorphisms, direct product of groups, group actions. Rings: examples of rings, integral domains, ideals, fields of fractions, principal ideal domains, unique factorization domains. Fields: definition and examples of fields. Polynomials: polynomial rings in one variable over fields and over the integers, Gauss' lemma.				
Course Learning Outcomes	1. Write d 2. Give ex	ssful completion of the course, stude own the precise definitions of the bas camples for each of the concepts in t tand basic properties of groups, ring	sic concepts in the "Co he "Course Conents".	urse Conents".		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	IATH2101 Linear algebra I				
Offer in 2014 - 2015	Y 1st	Y 1st sem Examination Dec			Dec	
Offer in 2015 - 2016	Y	Υ				
Course Grade	A+ to F					
Grade Descriptors	Α	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate under applications, or not being able to complete		le to identify appropri	ate theorems or their	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Examina	tion			50	
	Test				50	
Required/recommended reading and online materials	S. Lang: l J.B. Frale I.N. Herst	To be decided by the course instructor. S. Lang: Undergraduate Algebra (Springer, 2004) J.B. Fraleigh: A First Course in Abstract Algebra (Addison-Wesley, 1989, 4th edition) I.N. Herstein: Abstract Algebra (Prentice-Hall, 1996) T.W. Hungerford: Abstract Algebra: An Introduction (Saunders College Publishing, 1990, 2nd edition)), 2nd edition)	
Course Website		math.hku.hk/course/MATH3301/	,		,	
		The January Theory Tales of the Control of the Cont				

MATH3303 Matrix theory a	and its applications (6 credits)	Academic Year	2014		
Offering Department	Mathematics	Quota			
Course Co-ordinator	Dr M Young, Mathematics (myong @maths.hku.hk)				
Teachers Involved	Dr M Young, Mathematics				
Course Objectives	Matrix theory has a close connection with other mathematical subjects such as linear algebra, functional analysis, and combinatorics. It also plays an important role in the development of many subjects in science, engineering, and social sciences. In this course, students will be taught the fundamentals of matrix analysis and its application to various kinds of practical problems. Mathematical software may be used in the course, so that students can learn how to use the computer to solve matrix problems.				
Course Contents & Topics	Eigenvalues and eigenvectors: similarities, applications on difference equations and differential equations. Orthogonality: inner products and the induced norms, orthogonality of null spaces and column spaces, applications to over- or under-determined systems, least squares fit. Unitary, normal, and hermitian matrices: Schur's triangularization theorem. Variational description of eigenvalues: applications in optimization and in eigenvalue estimation. Singular value decomposition: polar decomposition, pseudo inverse, spectral norm of matrices, interlacing inequalities for singular values. Jordan form and applications.				
Course Learning Outcomes	On successful completion of the course, students should be able to 1. Have a good understanding on matrices, determinants, lin eigenvectors. 2. Understand the concept of similar matrices and the eigenvalue of 3. Understand the concept of orthogonality.	ear transformations,	eigenvalues and		
	163				

	Find the decompose	tand the concept of unitary, normal, ar e singular value decomposition of a m sition, pseudo inverse and spectral nor stand the concept of the Jordan bloc	natrix and apply the the matrices.	, ,		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	ATH2101 Linear algebra I and MATH2	2102 Linear algebra II			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F	+ to F				
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Examina	tion			50	
	Test				50	
Required/recommended reading and online materials	Steven J. Chris Rorr Roger A.	Jack L. Goldberg: Matrix Theory with Applications (McGraw-Hill, 1991) Steven J. Leon: Linear Algebra with Applications (Macmillan, 1994, 4th edition) Chris Rorres & Howard Anton: Applications of Linear Algebra (Wiley, 1984, 3rd edition) Roger A. Horn & Charles R. Johnson: Matrix Analysis (Cambridge University Press, 1987) The Mathworks, Inc.: The Student Edition of Matlab (Version 4 for Microsoft Windows) (Prentice - Hal				
Course Website	http://hkur	math.hku.hk/course/MATH3303/				

MATH3304 Introduction to	number theory (6 credits)	Academic Year	2014		
Offering Department	Mathematics	Quota			
Course Co-ordinator	Prof K M Tsang, Mathematics (kmtsang@maths.hku.hk)				
Teachers Involved	Prof K M Tsang, Mathematics				
Course Objectives	To provide students with basic concepts about numbers, their properties and the arithmetic of congruences. The prime numbers are the basic building blocks of all the natural numbers under multiplication. The interplay between the multiplicative and additive properties of prime numbers is particularly interesting. The course will study further properties and the distribution of the prime numbers, and some of the longstanding open problems concerning them. Important applications of number theory to modern cryptography will also be introduced.				
Course Contents & Topics	The course will begin with some basic notions in number theory, including divisibility, greatest common divisor, Euclidean algorithm, congruences, etc. It will then be followed by several fundamental theorems, such as Chinese remainder theorem, solutions of linear and polynomial congruences, Fermat's Little theorem, quadratic residues and the quadratic reciprocity law. Many well-known folklore open problems will also be introduced. Application of number theory to public key cryptography will be explained. Basic properties and some research on the prime numbers will be discussed. Then depending on the time remaining, the course will cover a selection of further topics, such as the prime number theorem, sum of squares, Dirichlet's theorem on diophantine approximations, etc.				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Solve a system of linear congruences. 2. Solve polynomial congruences. 3. Determine the solubility of quadratic congruences by computation of Legendre symbols. 4. Determine the existence of primitive roots and use them in solving some exponential congruences. 5. Understand the prime number theorem. 6. Understanding some longstanding problems in number theory.				
Pre-requisites	Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, M	IATH2211 Multivaria	ble calculus and		
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(and Co-requisites and Impermissible combination)		41 Introduction to mathematica //ATH3301 Algebra I, or alread				
Offer in 2014 - 2015	Y 2n	d sem		Examination	May	
Offer in 2015 - 2016	Υ			'	'	
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate a thorough and coherent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing number theoretic problems, clearly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly.				
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing number theoretic problems, but with some minor errors/inadequacies in arguments and being able to present coherent logical reasoning and carry out computations carefully without major errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with weak and fragmentary argument and presentation, or with moderate computational errors.				
	D	Demonstrate some superficial understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation, or with substantial computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding of the key concepts and ideas by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-b	pased course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)	
	Examina	ation			50	
	Test				50	
Required/recommended reading and online materials	T.M. Apo	Burton, Elementary Number T ostol, Introduction to Analytic N , A Concise Introduction to the	lumber Theory, Springer I	nternational Student Ed	dition.	
Course Website	http://hku	math.hku.hk/course/MATH330)4/			

MATH3401 Analysis I (6 ci	MATH3401 Analysis I (6 credits)			2014		
Offering Department	Mathemati	cs	Quota			
Course Co-ordinator	Prof W S C	Prof W S Cheung, Mathematics (wscheung @maths.hku.hk)				
Teachers Involved	Prof W S C	Cheung, Mathematics				
Course Objectives		This course extends to more general situations some basic results covered in Calculus and introduce some fundamental concepts which are essential for advanced studies in mathematical analysis.				
Course Contents & Topics	point; bour	Basic properties of metric spaces; openness; closedness; interior point; adherent point; accumulation point; boundary point; compactness; completeness; continuity; connectedness; pathwise connectedness uniform continuity; uniform convergence; Banach's fixed point theorem.				
Course Learning Outcomes	1. Demons topology (e 2. Apply kr a critical was 3. Think cr	On successful completion of the course, students should be able to: 1. Demonstrate knowledge and understanding of the basic features of mathematical analysis and point so topology (e.g., able to identify objects that are topological equivalent). 2. Apply knowledge and skills acquired in mathematical analysis to analyze and handle novel situations a critical way (e.g., able to determine whether a specific function is uniformly continuous). 3. Think creatively and laterally to generate innovative examples and solutions to non-standard problem (e.g., able to provide counterexamples to inaccurate mathematical statements).				
Pre-requisites and Co-requisites and mpermissible combination)	Pass in MA	ATH2211 Multivariable calculus				
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec		
Offer in 2015 - 2016	Υ		'	-		
Course Grade	A+ to F					
Jourse Grade						
	A	Demonstrate a thorough understanding of all concepts and ideas by various concepts and apply the theorems through correctly analyst correct logical reasoning and argumentation, and with some innovation.	ing problems, clearly and	l elegantly presenting		
	В	various concepts and apply the theorems through correctly analysis	ing problems, clearly and we approaches to solving p being able to identify the with some minor inadeq	l elegantly presenting problems.		
Grade Descriptors		various concepts and apply the theorems through correctly analyst correct logical reasoning and argumentation, and with some innovation. Demonstrate a good understanding of key concepts and ideas by and their applications through correctly analysing problems, but	ing problems, clearly and ve approaches to solving pubeing able to identify the with some minor inadeq entation.	I elegantly presenting problems. appropriate theorem uacies in arguments		

		theorems, but with substantial inade poor argument or presentation.	equacies in applying the theorems thro	ough incorrectly analysing problems with
	Fail	Demonstrate poor and inadequate applications, or not being able to cor		identify appropriate theorems or their
Course Type	Lecture-ba	Lecture-based course		
Course Teaching & Learning Activities	Activities	s	Details	No. of Hours
	Lectures			36
	Tutorials			12
	Reading / Self study			100
Assessment Methods and Weighting	Methods	•	Details	Weighting in final course grade (%)
	Examination			50
	Test			50
Required/recommended reading and online materials		Mathematical Analysis nciples of Mathematical Analysi	s	
Course Website	http://hkur	math.hku.hk/course/MATH3401/		

MATH3403 Functions of a	complex v	ariable (6 credits)		Academic Year	2014	
Offering Department	Mathemat	rics	(Quota		
Course Co-ordinator	Prof N Mo	k, Mathematics (nmok@hku.hk)				
Teachers Involved	Prof N Mo	k, Mathematics				
Course Objectives	of physics analytic fu	se is indispensable for studies in high s. In this course, the students are in sunctions and are shown how to look a ques of solving problems without losi	introduced to the fundar at analyticity from differe	nental concepts and points of view.	and properties of At the same time	
Course Contents & Topics	Cauchy's	number system. Analytic functions a theorem and its applications. Taylor's heorem and its applications.				
Course Learning Outcomes	1. Recognimathematical 2. Grasp formulas to 3. Compute 4. Apply states to the states of the states o	On successful completion of the course, students should be able to: 1. Recognize the theory of functions of a complex variable as a rigorous and foundational subject in mathematics. 2. Grasp the techniques from Cauchy-Riemann equations, power series expansion and Cauchy integral formulas to study analytic functions from different perspectives. 3. Compute contour integrals by calculating residues. 4. Apply such techniques to determine improper integrals such as those for certain rational functions on the real line.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	ATH2211 Multivariable calculus and	MATH2241 Introduction	to mathematical a	nalysis	
Offer in 2014 - 2015	Y 1st	sem	E	Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems of applications, or not being able to complete the solution.				e theorems or their	
	Fail			,,,		
Course Type						
Course Teaching		applications, or not being able to complete ased course				
Course Teaching	Lecture-b	applications, or not being able to complete ased course	the solution.		No. of Hours	
Course Teaching	Lecture-b	applications, or not being able to complete ased course	the solution.		No. of Hours	
Course Type Course Teaching & Learning Activities	Lecture-b. Activitie Lectures Tutorials	applications, or not being able to complete ased course	the solution.		No. of Hours 36 12 100	

		course grade (%)
	Examination	50
	Test	50
Required/recommended reading and online materials	E.C. Titchmarsh: The Theory of Functions (OUP) L.V. Ahlfors: Complex Analysis (McGraw-Hill, 3rd edition) J. Bak & D.J. Newman: Complex Analysis, Undergraduate Texts K. Kodaira: Introduction to Complex Analysis (Cambridge)	in Mathematics (Springer-Verlag)
Course Website	http://hkumath.hku.hk/course/MATH3403/	

MATH3405 Differential equ	uations (6 c	redits)		Academic Year	2014	
Offering Department	Mathemati	cs		Quota		
Course Co-ordinator	Dr C W Wo	ong, Mathematics (cwwongab@hku	ı.hk)			
Teachers Involved	Dr C W Wo	ong, Mathematics				
Course Objectives	importance	ard topics in the wide field of ordina e to students of sciences and eng s and our approach is a compromis	ineering. Our emphasi	s is on principles r		
Course Contents & Topics	differential	f elementary differential equation equations, Wronskian, variation of ctions. Linear systems, autonomou	f parameters. Power s	eries method, Lege	endre polynomials,	
Course Learning Outcomes	On succes	sful completion of the course, stude	ents should be able to:			
	auxiliary ed 2. Solve si and the nu 3. Discuss linear appr 4. Apply th	 Solve simple first order and second order (linear or nonlinear) ODEs by various techniques, including auxiliary equations, variation of parameters, Laplace transform, and series method. Solve systems of first order linear ODEs with constant coefficients, of which the number of equations and the number of unknown functions are no more than three. Discuss qualitatively the solutions of nonlinear ODEs or systems of nonlinear ODEs by studying thei linear approximations or their phase diagrams. Apply the theory of differential equations to study quantitatively/qualitatively problems from physical and life sciences. 				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)				
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ				'	
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems. B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems					
	C	and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors. Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate				
		theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriat theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems wi poor argument or presentation or with substantial computational errors.				
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.					
Course Type	Lecture-ba	sed course				
Course Teaching & Learning Activities	Activities	;	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in fina	
	Examinati	on			50	
	Test				50	
Required/recommended reading and online materials	R. Nagle, (Pearson, W.E. Boyo Wiley, 6th	E. Staff and A. Snider, Fundament 6th edition) te and R.C. DiPrima: Elementary I edition) ington: An Introduction to Ordinary I	Differential Equations	and Boundary Valu	ry Value Problems	
	L.A. C000	ington. An introduction to Ordinary I	Dinerential Equations (i i ci i ii ce-i i ali)		

MATH3408 Computationa applications (6 credits)	al methods	and differential equations with	Academic Year	2014		
Offering Department	Mathema	tics	Quota			
Course Co-ordinator	Dr C W W	ong, Mathematics (cwwongab@hku.hk)				
Teachers Involved	Dr C W W	ong, Mathematics				
Course Objectives		se covers topics in the fields of differential eque to sciences students. The emphasis is practical				
Course Contents & Topics	differentia	I differentiation and integration. Solution of nor I equations. Power series method. Numerical Numerical solutions of systems of first-order ordi	solutions of ordinary and			
Course Learning Outcomes	On succe	ssful completion of the course, students should be	able to:			
	solution o 2. Explair 3. Construction ordinary of properties 4. Construction analyze the	 Construct and implement numerical methods for numerical integration and differentiation, and the solution of nonlinear system of equations. Explain mathematical ideas of numerical methods in solving ordinary and partial differential equations. Construct one-step and linear multistep methods for the numerical solution of initial-value problems for ordinary differential equations and systems of such equations and analyze their stability and accuracy properties. Construct finite difference methods for the numerical solution of partial differential equations and analyze their stability and accuracy properties. Implement numerical methods for solving initial and boundary value problems by software packages lik Scilab. 				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)				
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and computational methods and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems. B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and computational methods and their applications through correctly analysing problems, but with some minor inadeguacies in arguments, identifying the appropriate theorems and computational methods or their applications					
	С	theorems and computational methods, but with some inadequacies in applying them through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems and computational methods, but with substantial inadequacies in applying them through incorrectly analysing problems with poor argument or presentation or with substantial computational errors. Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems and					
	∣Fail	Demonstrate poor and inadequate understanding by	not being able to identify appro	priate theorems and		
	Fail	Demonstrate poor and inadequate understanding by computational methods or their applications, or not being a		priate theorems and		
Course Type				priate trieorems and		
Course Teaching		computational methods or their applications, or not being a ased course				
Course Teaching	Lecture-b	computational methods or their applications, or not being a assed course Details		No. of Hours		
Course Teaching	Lecture-b	computational methods or their applications, or not being a assed course Details		No. of Hours		
Course Teaching	Lecture-b Activitie Lectures Tutorials	computational methods or their applications, or not being a assed course Details		No. of Hours 36		
Course Teaching & Learning Activities Assessment Methods	Lecture-b Activitie Lectures Tutorials	computational methods or their applications, or not being a ased course Details / Self study	ble to complete the solution.	No. of Hours 36 12 100 Weighting in final		
Course Teaching & Learning Activities Assessment Methods	Lecture-b Activitie Lectures Tutorials Reading	computational methods or their applications, or not being a assed course S	ble to complete the solution.	No. of Hours 36 12 100 Weighting in final course grade (%)		
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Lecture-b Activitie Lectures Tutorials Reading Methods	computational methods or their applications, or not being a assed course S	ble to complete the solution.	No. of Hours 36 12 100 Weighting in final course grade (%)		
Course Teaching & Learning Activities Assessment Methods	Lecture-b Activitie Lectures Tutorials Reading Methods Examina Test D.F. Park E.A. Code	computational methods or their applications, or not being a assed course S	vironmental Science (Springe quations (Prentice-Hall)	No. of Hours 36 12 100 Weighting in final course grade (%) 50		

MATH3600 Discrete math	Academic Year	2014					
Offering Department	Mathematics	Quota					
Course Co-ordinator	Prof W Zang, Mathematics (wzang@maths.hku.hk)						
Teachers Involved	Prof W Zang, Mathematics	Prof W Zang, Mathematics					
Course Objectives	To introduce students to the basic ideas and techniques of discrete m	To introduce students to the basic ideas and techniques of discrete mathematics.					
Course Contents & Topics	- Counting: combinations, permutations, pigeonhole principle, inclusion-exclusion, recurrence relations, and generating functions - Graph theory: paths, circuits, trees, connectivity, planarity, etc.						
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	- Applicati	ions of counting technique	s and graph theory				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Demonstrate knowledge and understanding of the basic ideas and techniques of discrete mathematics. 2. Solve various real-world problems by using counting techniques and graph theory. 3. Develop their ability to read, comprehend, and create mathematical arguments.						
Pre-requisites (and Co-requisites and Impermissible combination)	Calculus any 1 of	Pass in (MATH1013 University mathematics II and any 1 of Level 2 MATH courses) or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics and any 1 of level 2 MATH courses) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)					
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec		
Offer in 2015 - 2016	Υ			'	'		
Course Grade	A+ to F						
Grade Descriptors	Α	theorems and their applicatio	nderstanding of key concepts and ns through correctly analysing proble n and being able to carry out com ving problems.	ms, clearly and elegantly p	resenting correct logical		
	В	and their applications throu	tanding of key concepts and ideas b gh correctly analysing problems, bu eorems or their applications and prese	ut with some minor inade	quacies in arguments,		
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.						
Course Type	Lecture-b	ased course					
Course Teaching	Activitie	s	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)		
	Examina	tion			50		
	Test				50		
Required/recommended reading and online materials	K H Rose NIL	n: Discrete Mathematics a	nd its Applications (McGraw-F	Hill, 2007)			
Course Website	http://hkui	math.hku.hk/course/MATH	3600/				

MATH3601 Numerical analysis (6 credits)						Academic Year	2014
Offering Department	Mathemat	Mathematics				Quota	
Course Co-ordinator	Dr M Y Yi	Yim, Math	nematics (my	yim @hku.hk)		·	
Teachers Involved	Dr M Y Yi	Dr M Y Yim, Mathematics					
Course Objectives		This course covers both the theoretical and practical aspects of numerical analysis. Emphasis will be on basic principles and numerical methods of solution, using high speed computers.					
Course Contents & Topics						ns of one variable. Dintegration. Simple initi	
Course Learning Outcomes	1. Construand fixed 2. Constru 3. Constru 4. Apply th 5. Solve in	truct and d point ite truct and truct inter the basic initial val	implement a eration metho implement N polation poly numerical ir lue problems	lgorithms to find ds. ewton's method nomials in Lagra itegration and dii using Taylor ser	to find the roots of nge, Newton, Hern	ions, apply the bisection a system of nonlinear entity and spline forms. ds. ta methods of varying of the system o	equations.
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)					
Offer in 2014 - 2015	Y 1st	st sem				Examination	Dec
Offer in 2015 - 2016	Υ					·	·
Course Grade	A+ to F						
Grade Descriptors	A					nethods by being able to id	

		correct logical reasoning and argumentation and being able to carry out numerical procedures carefully and correctly, and with some innovative approaches to solving problems.						
	В	Demonstrate a good understanding of key concepts and methods by being able to identify the appropriat theorems/algorithms and their applications through correctly analysing problems, but with some minor inadequac in arguments, identifying the appropriate algorithms or their applications or with some minor computational errors.						
	С	Demonstrate an acceptable understandin appropriate theorems/algorithms, but with s analysing problems with poor argument and	ome inadequacies in applying th	e theorems/methods through incorrectly				
	D	Demonstrate some understanding of key concepts and methods by being able to correctly identify appropriate theorems/algorithms, but with substantial inadequacies in applying the theorems/methods through incorrectly analysing problems with poor argument and presentation or with substantial computational errors.						
	Fail	Demonstrate poor and inadequate underst their applications, or not being able to comp		ntify appropriate theorems/algorithms or				
Course Type	Lecture-	based course						
Course Teaching & Learning Activities	Activities		Details	No. of Hours				
& Learning Activities	Lectures			36				
	Tutorials			12				
	Reading / Self study			100				
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)				
	Examination			50				
	Test			50				
Required/recommended reading and online materials	A. Ralsto	Instructor's Lecture Notes A. Ralston and P. Rabinowitz: A First Course in Numerical Analysis (McGraw-Hill) K. E. Atkinson: An Introduction to Numerical Analysis (Wiley, 1989)						
Course Website	http://hk	umath.hku.hk/course/MATH3601/						
Additional Course Information	Knowled	lge of a programming language is requi	red.					

	eory (6 cred	s)	Academic Y	ear	2014		
Offering Department	Mathemati	3	Quota				
Course Co-ordinator	Dr G Han,	athematics (ghan@maths.hku.hk)					
Teachers Involved	Dr G Han,	athematics					
Course Objectives	elucidate t	sis of this course will be on probability mode e fundamental principles of probability theory to apply what they have learned from this cou	through examples and to	dev	elop the ability		
Course Contents & Topics	distribution Bayes' The Poisson concepts of Markov of application	- Basic probability theory and decision theory: discrete probability distributions, continuous probability distributions, conditional probability, expectation, variance, moment generating function, limit theorems Bayes' Theorem, decision analysis, decision tree method - Poisson process and reliability theory: exponential distribution, Markov property, Poisson process concepts of reliability, components in series, components in parallel, maintenance models - Markov chain theory: concepts of states and transition probability, irreducibility, stationary distribution applications in marketing and genetic problems, branching process, other Markov models - Inventory theory: concepts of EOQ, lead time effect, newsboy models, stochastic inventory systems					
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the fundamental principles of probability theory. 2. Explain the typical proofs and computational techniques in probability theory and apply them to concret problems. 3. Demonstrate knowledge and understanding of various types of probability models.						
		ate knowledge and understanding of various	types of probability models	i.			
and Co-requisites and	3. Demons	ate knowledge and understanding of various t TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat	ltivariable calculus) or (M/	TH18			
and Co-requisites and mpermissible combination)	3. Demons	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat	ltivariable calculus) or (M/	ATH18 scien			
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	3. Demons Pass in (N methods fo	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat	Itivariable calculus) or (Maical methods for actuarial	ATH18 scien	ce II)		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	3. Demons Pass in (Methods for Y 1st)	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat	Itivariable calculus) or (Maical methods for actuarial	ATH18 scien	ce II)		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Demons Pass in (M methods fo	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat	Examination epts and ideas by being able ing problems, clearly and elegar	ATH18 sciend	Dec ntify the appropria		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Demons Pass in (N methods for Y 1st: Y A+ to F	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat m Demonstrate an excellent understanding of key concitheorems and their applications through correctly analysi reasoning and argumentation and being able to carry	Itivariable calculus) or (Maical methods for actuarial Examination epts and ideas by being able ing problems, clearly and elegar out computations carefully and ideas by being able to identifiblems, but with some minor in	ATH18 science to identify pressing correctly the adequate adequate the	Dec http://dec.mit.gov.ore.clip.clip.clip.clip.clip.clip.clip.clip		
and Co-requisites and mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Demons Pass in (N methods for Y 1st: Y A+ to F	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat m Demonstrate an excellent understanding of key concepte or many and their applications through correctly analysing reasoning and argumentation and being able to carry innovative approaches to solving problems. Demonstrate a good understanding of key concepts an and their applications through correctly analysing pro	Examination Epts and ideas by being able ing problems, clearly and elegan out computations carefully and ideas by being able to identification to incomputation or with some minor in and presentation or with some repts and ideas by being able to theorems through incorrectly and theorems through incorrectly and ideas by being able to theorems through incorrectly and ideas by being able to theorems through incorrectly and ideas by being able to theorems through incorrectly and ideas by being able to theorems through incorrectly and ideas by being able to the core in	to ider	Dec https://www.mtg.ace.org.com/mtg/propriate decires in argument omputational errors y identify appropriate y identify appropriate organizational errors or identify appropriate organization or identification or ident		
Pre-requisites (and Co-requisites and (impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	3. Demons Pass in (Monethods for Young 1st) Y 1st: Y A+ to F A B	TH2101 Linear algebra I and MATH2211 Mu actuarial science I and MATH2822 Mathemat m Demonstrate an excellent understanding of key conce theorems and their applications through correctly analysis reasoning and argumentation and being able to carry innovative approaches to solving problems. Demonstrate a good understanding of key concepts an and their applications through correctly analysing pro identifying the appropriate theorems or their applications Demonstrate an acceptable understanding of key conce theorems, but with some inadequacies in applying the	Examination Exami	to identify to identify the adequation of correctly alysing	Dec Intify the appropria senting correct logically, and with son appropriate theorer acies in argument omputational errors by identify appropria g problems with po- identify appropria		

	applications, or not being able to complete the solution.					
Course Type	Lecture-based course					
Course Teaching & Learning Activities	Activities	Details	No. of Hours			
	Lectures		36			
	Tutorials		12			
	Reading / Self study		100			
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)			
	Examination		50			
	Test		50			
Required/recommended reading and online materials	S.M. Ross: Introduction to Probability Models (Academic Press, 2007, 9th ed.)					
Course Website	http://hkumath.hku.hk/course/MATH	13603/				

MATH3901 Operations re	search I (6	credits)		Academic Year	2014		
Offering Department	Mathema	atics		Quota			
Course Co-ordinator	Prof S C	Prof S C K Chu, Mathematics (schu@hku.hk)					
Teachers Involved	Prof S C	Prof S C K Chu, Mathematics					
Course Objectives	programr aspects	The objective is to provide a fundamental account of the basic results and techniques of linear programming (LP) and its related topics in operations research. There is an equal emphasis on all three aspects of understanding, algorithms and applications. The course serves, together with a course on network models, as essential concept and background for more advanced studies in operations research.					
Course Contents & Topics	Linear Pr	Linear Programming. Matrix game. Goal programming.					
Course Learning Outcomes	On succe	essful completion of the course,	students should be able to):			
	study of o 2. Demoi extension	stand the fundamental concep operations research. nstrate knowledge and understans such as the revised Simplex stand and apply the theory of Lf	anding of the underlying te and dual Simplex algorithn	chniques of the Simples.	ex Method and its		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in N	MATH2101 Linear algebra I or N	/IATH2102 Linear algebra l	II			
Offer in 2014 - 2015	Y 1s	t sem		Examination	Dec		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	В	appropriate theorems, algorithms and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and to solve problems with some innovative approaches. B Demonstrate a good understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor					
	С	computational errors. Demonstrate an acceptable understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	В	D Demonstrate some understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify basic principles, appropriate theorems, algorithms or their applications, or not being able to complete or compute the solution.					
Course Type	Lecture-b	pased course					
Course Teaching	Activitie	es	Details		No. of Hours		
& Learning Activities	Lectures	3			36		
	Tutorials	Tutorials			12		
	Reading	Reading / Self study			100		
Assessment Methods and Weighting	Method	Methods			Weighting in final course grade (%)		
and Weighting	Examination				50		
and Weighting	Examina	ation			30		

reading and online materials	J.P. Ignizio: Goal Programming and Extensions (Lexington Books, 1976) H.A. Taha: Operations Research (Prentice-Hall International, 7/e 2003) P.R. Thie: An Introduction to Linear Programming and Game Theory (Wiley 2/e 1988) W.L. Winston: Introduction to Mathematical Programming (Duxbury 4/e 2003)
Course Website	http://hkumath.hku.hk/course/MATH3901/

MATILIONA Interdentia		ion (Consulta)		Academia Vasa	2014		
MATH3904 Introduction to	_			Academic Year	2014		
Offering Department	Mathemat	tics		Quota			
Course Co-ordinator	Prof W Za	ang, Mathematics (wzang@maths.hku.hk	k)				
Teachers Involved	Prof W Za	ang, Mathematics					
Course Objectives		This course introduces students to the theory and techniques of optimization, aiming at preparing them for iurther studies in operations research, mathematical economics and related subject areas.					
Course Contents & Topics		ained and constrained optimization, nece, , duality. Algorithms and numerical exam		nd sufficient condit	ions for optimality,		
Course Learning Outcomes	On succes	ssful completion of the course, students	should be able to:				
	2. Solve v 3. Unders	strate knowledge and understanding of t rarious optimization problems encountere tand the connection between the purely of algorithms for solving it.	ed in practice.				
Pre-requisites (and Co-requisites and Impermissible combination)		MATH2101 Linear algebra I and MATH2 for actuarial science I and MATH2822 Ma					
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.						
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.						
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.						
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.						
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.						
Course Type	Lecture-ba	ased course					
Course Teaching	Activities	s	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)		
	Examination				50		
	Test				50		
Required/recommended reading and online materials	Instructor'	s lecture notes					
Course Website	http://hkur	math.hku.hk/course/MATH3904/					
· · · · · · ·	1						

MATH3905 Queueing theor	Academic Year	2014				
Offering Department	Mathematics Quota					
Course Co-ordinator	Prof W K Ching, Mathematics (wching@hku.hk)					
Teachers Involved	Prof W K Ching, Mathematics					
Course Objectives	This course introduces students to the models and theory of queueing system, as well as the technique of simulation as a practical tool of analysis.					
Course Contents & Topics	Markov, birth-and-death, and Poisson processes, exponential models. Markovian queueing networks. Imbedded Markov-chain queueing models. Simulation of queueing models and discrete-event systems.					
Course Learning Outcomes	On successful completion of the course, students should be able to:					

	 Demor Formu 	Understand the terminology and nomenclature appropriate to queueing theory. Demonstrate knowledge and understanding of various queueing models. Formulate concrete problems using queueing theoretical approaches. Become familiar with fundamental principles of simulation and compare different simulation techniques					
Pre-requisites (and Co-requisites and Impermissible combination)	methods		ra I and MATH2211 Multivaria d MATH2822 Mathematical me				
Offer in 2014 - 2015	N			Examination			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	Α	and their applications th	understanding of key concepts and ic rough correctly analysing problems, ation and being able to carry out co ative approaches.	clearly and elegantly presi	enting correct logical		
	В	their applications through	erstanding of key concepts and ideas correctly analysing problems, but with or their applications and presentation of	some minor inadequacies in	arguments, identifying		
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail		nadequate understanding by not beinable to complete the solution.	ng able to identify appropria	ate theorems or their		
Course Type	Lecture-b	pased course					
Course Teaching	Activitie	es	Details		No. of Hours		
& Learning Activities	Lectures	Lectures			36		
	Tutorials	Tutorials			12		
	Reading	Reading / Self study			100		
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)		
	Examina	ation			50		
	Test				50		
Required/recommended reading and online materials	S.M. Ros		ueing Theory (Edward Arnold, 1 illity Models (Academic Press, n (Macmillan, 1991)				
Course Website	http://hku	ımath.hku.hk/course/MA	TH3905/				

MATH3906 Financial calcu	llus (6 cred	its)			Academic Year	2014		
Offering Department	Mathematic	Mathematics						
Course Co-ordinator	Dr C W Wo	ong, Mathematics (cwv	vongab @hku.hk)					
Teachers Involved		Dr C W Wong, Mathematics Dr S P Yung, Mathematics						
Course Objectives	market risk	This course gives an elementary treatment for the modeling of financial derivatives, asset pricing and market risks from an applied mathematician's point of view. Stochastic calculus and solution methods will be introduced.						
Course Contents & Topics	contracts.	An introduction to financial instruments: stocks, bonds, foreign exchange, options, forward and future contracts. Asset pricing: risk neutral relationship, no arbitrage principle. Brownian motion, stochastic calculus, Ito's Lemma, Black-Scholes model and its pricing partial differential equation. Variations on the Black-Scholes model: American options, path dependent options. Numerical binomial tree method.						
Course Learning Outcomes	1. Understathe no-arbition 2. Demons 3. Describe 4. Implement	and the terminology and the terminology and trage-principle. trate knowledge on us a basic properties of a ent stochastic calculus on various type of option	nd nature of bonds, iing binomial tree mod Brownian motion and (such as Ito's Lemm	nterest rates, fo dels to find optio d the Black-Scho na) to derive Bla	on prices via the risk ples stock price mod ack-Scholes pricing	k-neutral concept del. partial differentia		
Pre-requisites (and Co-requisites and Impermissible combination)	methods f	ATH2101 Linear alget or actuarial science Probability and statisti	I and MATH2822 N					
Offer in 2014 - 2015	Y 1st s	sem			Examination	Dec		
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F							
Grade Descriptors	Α	Demonstrate an exceller	nt understanding of key	concents and ideas	s by being able to ide	ntify the appropriate		

		theorems and their applications through cor reasoning and argumentation and being a innovative approaches to solving problems.			
	В	Demonstrate a good understanding of key of their applications through correctly analysin the appropriate theorems or their application	g problems, but with some mino	r inadequacies in arguments, identifying	
	С	Demonstrate an acceptable understanding theorems, but with some inadequacies in argument and presentation or a number of r	applying the theorems through in		
	D	able to correctly identify appropriate ugh incorrectly analysing problems with			
	Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorem applications, or not being able to complete the solution.			
Course Type	Lecture-based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)	
	Examination			50	
	Test			50	
Required/recommended reading and online materials	A. Etheridge: A Course in Financial Calculus (Cambridge University Press) M. Baxter and A. Rennie: Financial Calculus: An Introduction to Derivative Pricing (Cambridge Unive Press, 1996) P. Wilmott, S. Howison, J. Dewynne: The Mathematics of Financial Derivatives (Cambridge Unive Press, 1995) R. Jarrow, S. Turnbull: Derivative Securities (South-Western College Publishing, 1994)			ve Pricing (Cambridge University erivatives (Cambridge University	
Course Website	http://hku	ımath.hku.hk/course/MATH3906/	_	<u> </u>	

MATH3911 Game theory a	nu sirateg	y (o credits)	Academic Year	2014		
Offering Department	Mathemat	iics	Quota			
Course Co-ordinator	Dr K H La	w, Mathematics (lawkaho@maths.hku.hk)				
Teachers Involved	Dr K H La	Dr K H Law, Mathematics				
Course Objectives		Game theory is the logical analysis of situations of conflict and cooperation. This course will introduce the students to the basic ideas and techniques of mathematical game theory in an interdisciplinary context.				
Course Contents & Topics	theorem; form; Sha	Combinatorial games and Zermelo's Theorem; Prisonner's Dilemma; pure and mixed strategies, minima: theorem; mixed Nash equilibria; application to biology: evolutionary stable strategies; games in coalition form; Shapley value; application to politics: Shapley-Shubik power index; core and von Neumani Morgenstern solution; bargaining set.				
Course Learning Outcomes	1. Unders 2. Compu	On successful completion of the course, students should be able to: 1. Understand the basic terminology and solution concepts in game theory. 2. Compute explicitly different solution concepts for some simple cooperative and non-cooperative games 3. Apply game theoretical ideas and methods to solve some problems in economics and biology.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in (MATH2101 Linear algebra I and MATH2211 Multivariable calculus) or (MATH1821 Mathematical methods for actuarial science I and MATH2822 Mathematical methods for actuarial science II)					
Offer in 2014 - 2015	Y 2nd	l sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts ar appropriate theorems and their applications through correct correct logical reasoning and being able to carry out compute approaches to solving problems.	y analysing problems, clearly an	d elegantly presenting		
	В					
	С	C Demonstrate an acceptable understanding of key concepts and ideas of Game Theory by being able to corre identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analyst problems with poor argument and presentation or a number of minor computational errors.				
	D	D Demonstrate some understanding of key concepts and ideas of Game Theory by being able to correctly iden appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysi problems with poor argument or presentation or with substantial computational errors.				
	Fail					
Course Type	14 1-	ased course				

Course Teaching & Learning Activities	Activities	Details	No. of Hours
a Learning Activities	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Examination		50
	Test		50
Required/recommended reading and online materials	Robert J. Aumann, Lectures on Gam	e Theory, Westview Press, 1989.	
Course Website	http://hkumath.hku.hk/course/MATH3	911/	

MATH3943 Network mode	is in opera	itions research (6 cred	its)	Academic Year	2014	
Offering Department	Mathema	tics		Quota		
Course Co-ordinator	Prof W Za	ang, Mathematics (wzang@	maths.hku.hk)			
Teachers Involved	Prof W Za	ang, Mathematics				
Course Objectives	operation application	s research. There is an eq ns. The course serves, to	ental account of the basic re ual emphasis on all three a gether with a course on li vanced studies in operations	aspects of understanding near programming, to	g, algorithms and	
Course Contents & Topics	problems algorithm	. Ford-Fulkerson network flo	chings and paths. Network of the theory and computation natorial optimization proble permits.	for maximum flow and r	minimum cost flov	
Course Learning Outcomes	1. Unders further stu 2. Demoi network a	On successful completion of the course, students should be able to: 1. Understand the fundamental concept and approach of graphs and network models appropriate to the further study of operations research. 2. Demonstrate knowledge and understanding of the underlying techniques of the various graph and network algorithms and their extensions. 3. Understand the theory of network flows and the duality aspects in such methods of flow computations.				
Pre-requisites (and Co-requisites and Impermissible combination)			and MATH2211 Multivariable arch I, or already enrolled in			
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and to solve problems with some innovative approaches. B Demonstrate a good understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications through correctly analysing problems, but with some minor inadequacies					
	С	in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors. Demonstrate an acceptable understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to identify basic principles, appropriate theorems, algorithms and their applications but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail		uate understanding by not being ab s, or not being able to complete or c		appropriate theorems,	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in fina	
	Examina	tion			50	

reading and online materials	R.K. Ahuja, T.L. Magnanti and J.L. Orlin: Network Flows: Theory Algorithms, and Applications. (1993) H.A. Taha: Operations Research: an Introduction. (7/e 2003)
Course Website	http://hkumath.hku.hk/course/MATH3943/
Additional Course Information	TBC

MATH3999 Directed st				Academic Year		
Offering Department	Mathema			Quota		
Course Co-ordinator	Prof W K	Ching, Mathematics (wching@hku.hk)				
Teachers Involved	All teachi	ng staff, Mathematics				
Course Objectives		rse is designed for students who would ent studies.	like to have earl	y experiences on	research related	
Course Contents & Topics	The stud	ect matter of the project will be determined be ent must achieve good standing and get the pordinator to take this course.				
Course Learning Outcomes	On succe	n successful completion of the course, students should be able to:				
outcomes	2. Unders	independently a topic that is not available in t stand how mathematical theories are applied xperience in project writing and oral presenta	and/or extended in			
Pre-requisites (and Co-requisites and Impermissible combination)	or MATH Linear alo to mather	It least 24 credits of advanced level compulso (6XXX) in the Mathematics, and Mathematic gebra I, MATH2102 Linear algebra II, MATH matical analysis. Stone course is for Mathematics, and Mathem	cs/Physics Majors, 2211 Multivariable	in addition to a p calculus and MAT	ass in MATH2101	
Offer in 2014 - 2015	Y 2n	d sem		Examination	No Exam	
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical evaluation of information drawn from a broad range of high quality sources and to reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.				
	D					
	Fail	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical compariso of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skill are minimally effective or ineffective.				
Course Type	Project-b	ased course				
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Reading	Reading / Self study Reading / Self study Independent work & to attend meetings & seminars				
Assessment Methods and Weighting	Methods	S	Details		Weighting in fina course grade (%	
	Disserta	tion	Written report presentation	plus oral	100	

MATH4302 Algebra II (6 cr	edits)	Academic Year	2014			
Offering Department	Mathematics Quota					
Course Co-ordinator	Prof J T Yu, Mathematics (yujt@hku.hk)	Prof J T Yu, Mathematics (yujt@hku.hk)				
Teachers Involved	Prof J T Yu, Mathematics					
Course Objectives	This course is an extension of Algebra I and goes deeper into the various topics treated in that course. Together, the two courses are complete in themselves, and may be followed by Topics in Algebra and Topics in Applied Discrete Mathematics.					
Course Contents & Topics	 Presentation of groups: generators and relations, free groups Polynomial rings in several variables Fundamental theorem on symmetric polynomials Fields extensions, elements of Galois theory (characteristic zero) 					
Course Learning Outcomes	On successful completion of the course, students should be able to:					

	 Understand and compute splitting fields of irreducible polynomials. Understand and compute typical extensions of fields. Compute the automorphisms and Galois groups of field extensions. 					
Pre-requisites and Co-requisites and mpermissible combination)	Pass in Ma	Pass in MATH3301 Algebra I				
Offer in 2014 - 2015	Y 2nd	Y 2nd sem Examination May				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the approximate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct reasoning and argumentation and being able to carry out computations carefully and correctly, and with innovative approaches to solving problems.				resenting correct logical	
	В	Demonstrate a good understanding of ke and their applications through correctly identifying the appropriate theorems or th	analysing problems, but w	rith some minor inaded	quacies in arguments,	
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or applications, or not being able to complete the solution.				ate theorems or their	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	/ Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Examinat	ion			50	
	Test				50	
Required/recommended reading and online materials	J.B. Fraleigh: A First Course in Abstract Algebra (Addison-Wesley, 1989, 4th ed.) I.N. Herstein: Topics in Algebra (Wiley, 1975) N. Jacobson: Basic Algebra (Freeman, 1974) S. Lang: Undergraduate Algebra (Springer, 1996) T.W. Hungerford: Abstract Algebra: An Introduction (Saunders College Publishing, 1990, 2nd ed.)					
Course Website	http://hkun	nath.hku.hk/course/MATH4302/				

MATH4402 Analysis II (6 c	redits)	Academic Year	2014		
Offering Department	Mathematics	Quota			
Course Co-ordinator	Dr F Ye, Mathematics (fye@maths.hku.hk)				
Teachers Involved	Dr F Ye, Mathematics				
Course Objectives		This course gives a comprehensive and rigorous treatment on calculus of several variables, and a moderr treatment of integration theory in the language of differential forms which is essential for more advanced studies in analysis and geometry.			
Course Contents & Topics	Differentiation of functions of several variables: partial derivatives, differential, differentiability, invers function theorem, implicit function theorem, free extremum problems, constrained extremum problem method of Lagrange multipliers Integration in R^n: Basic definitions, measure zero and content zero sets, integrability, Fubini's Theorem partition of unity, change of variables Integration on chains: tensors, alternating tensors, vector fields, differential forms, Poincare Lemma Stokes' Theorem				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Demonstrate knowledge and understanding of the modern language of mathematical analysis and geometry (e.g., able to manipulate differential forms). 2. Apply knowledge and skills acquired in mathematical analysis to analyze and handle novel situations is a critical way (e.g., able to determine the differentiability and integrability of specific functions). 3. Think creatively and laterally to generate innovative solutions to novel problems (e.g., able to de integration of specific functions on chains).				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH3401 Analysis I				
Offer in 2014 - 2015	Y 2nd sem	Examination	May		
Offer in 2015 - 2016	Y				

Course Grade	A+ to F	A+ to F				
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-based course					
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Method	ls	Details	Weighting in final course grade (%)		
	Examination			50		
	Test			50		
Required/recommended reading and online materials	Munkres	Mathematical Analysis : Analysis on Manifolds rinciples of Mathematical Analysis				
and online materials	Spivak: Calculus on Manifolds					

	alysis (6 cre	dits)	Academic Year	2014		
Offering Department	Mathemati	cs	Quota			
Course Co-ordinator	Dr C W Wo	ong, Mathematics (cwwongab@hku.hk)				
Teachers Involved	Dr C W Wo	Dr C W Wong, Mathematics				
Course Objectives		This course introduces students to the basic knowledge of linear functional analysis, an important branch of modern analysis.				
Course Contents & Topics	- Normed signification of the finite dimer of the finite dimer of the finite dimers of the fi	Metric spaces: Open and closed sets. Convergent sequences. Completeness Normed spaces, Banach spaces: Finite dimensional normed spaces and subspaces. Compactness are inite dimension. Bounded linear operators. Normed spaces of operators, dual space Inner product spaces, Hilbert spaces: Orthogonal complements, direct sums. Orthonormal sets are sequences, series related to orthonormal sets and sequences. Total orthonormal sets and sequences special polynomials. Riesz's representation theorem. Adjoint operator, self-adjoint, normal and unital operators Fundamental theorems for normed and Banach spaces: Hahn-Banach theorem. Reflexive space Category theorem, uniform boundedness principle. Open mapping theorem. Closed graph theorem.				
Course Learning Outcomes	1. Compar	re and contrast (i) finite and infinite dimension	onal linear spaces, (ii) comple			
	completende 2. Understa these space 3. Discuss 4. Discuss	ce, and (iii) normed and inner product spacess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert Ses. the dual spaces of some standard Banach spathe boundedness of linear operators and the sunctional analysis in the study of differential equ	n these spaces. Spaces. State and apply fundances. Description of special linear operations.	amental theorems		
(and Co-requisites and	completender 2. Understathese space 3. Discuss 4. Discuss 5. Apply fu	ess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert St ces. the dual spaces of some standard Banach spa the boundedness of linear operators and the s	n these spaces. Spaces. State and apply fundances. pectra of special linear operativations and optimization problemagebra II, MATH2211 Multiva	amental theorems in the core.		
(and Co-requisites and Impermissible combination)	completenders: Understathese space 3. Discuss 4. Discuss 5. Apply fur Pass in MATH224	ess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert Ses. the dual spaces of some standard Banach spathe boundedness of linear operators and the sunctional analysis in the study of differential equation ATH2101 Linear algebra I, MATH2102 Linear	n these spaces. Spaces. State and apply fundances. pectra of special linear operativations and optimization problemagebra II, MATH2211 Multiva	amental theorems		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	completenders: Understathese space 3. Discuss 4. Discuss 5. Apply fur Pass in MATH224	ess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert Sizes. the dual spaces of some standard Banach spathe boundedness of linear operators and the sinctional analysis in the study of differential equipart ATH2101 Linear algebra I, MATH2102 Linear 1 Introduction to mathematical analysis and MA	n these spaces. Spaces. State and apply fundances. pectra of special linear operate ations and optimization problems. ATH3401 Analysis I	ors. ems. ariable calculus an		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	completender 2. Understathese space 3. Discuss 4. Discuss 5. Apply fur Pass in MATH224*	ess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert Sizes. the dual spaces of some standard Banach spathe boundedness of linear operators and the sinctional analysis in the study of differential equipart ATH2101 Linear algebra I, MATH2102 Linear 1 Introduction to mathematical analysis and MA	n these spaces. Spaces. State and apply fundances. pectra of special linear operate ations and optimization problems. ATH3401 Analysis I	ors. ems. ariable calculus ar		
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	completend 2. Underst these space 3. Discuss 4. Discuss 5. Apply fu Pass in MATH224 Y 2nd Y	ess and discuss how vectors are represented in and the notions of Banach spaces and Hilbert Sizes. the dual spaces of some standard Banach spathe boundedness of linear operators and the sinctional analysis in the study of differential equipart ATH2101 Linear algebra I, MATH2102 Linear 1 Introduction to mathematical analysis and MA	n these spaces. Spaces. State and apply fundances. pectra of special linear operatiations and optimization proble algebra II, MATH2211 Multiva ATH3401 Analysis I Examination Experts and ideas by being able to ising problems, clearly and elegantly propers.	amental theorems ors. ems. ariable calculus an May dentify the appropriate resenting correct logics		

	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify approximately theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with argument and presentation or a number of minor computational errors.			
	D		g able to correctly identify appropriate ough incorrectly analysing problems with		
	Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems of applications, or not being able to complete the solution.			
Course Type	Lecture-	based course			
Course Teaching & Learning Activities	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Method	ls	Details	Weighting in final course grade (%)	
	Examination			50	
	Test			50	
Required/recommended reading and online materials	Erwin Kreyszig: Introductory Functional Analysis with Applications (John-Wiley and Sons, 1978)			Wiley and Sons, 1978)	
Course Website	http://hku	umath.hku.hk/course/MATH4404/			

MATH4406 Introduction t	o partial dif	ferential equations (6 credits)		Academic Year	2014	
Offering Department	Mathema	tics		Quota		
Course Co-ordinator	Dr S Wu,	Mathematics (swu@maths.hku.hk)				
Teachers Involved	Dr S Wu,	Dr S Wu, Mathematics				
Course Objectives		This course introduces students to the basic techniques for solving partial differential equations as well as the underlying theories.				
Course Contents & Topics	value and Duhamel' solutions.	Laplace, heat and wave equations. Classification of partial differential equations. Boundary-value, initial-value and eigenvalue problems. Separation of variables, Fourier series, linearity and superposition, Duhamel's principle, characteristic method. Green's function, generalized functions and fundamental solutions. Maximum principle, existence, uniqueness and continuous dependence on data. If time permits Cauchy-Kowalevski theorem, variational method, nonlinear partial differential equations.				
Course Learning Outcomes	1. Apply t 2. Unders	On successful completion of the course, students should be able to: 1. Apply the tools of calculus, linear algebra, mathematical analysis in a coherent way to PDE problems. 2. Understand the basic theory of partial differential equations and the methods to solve them. 3. Apply the knowledge of partial differential equations to physical sciences and engineering.				
Pre-requisites (and Co-requisites and Impermissible combination)	mathema	Pass in MATH2101 Linear algebra I, MATH2102 Linear algebra II, MATH2241 Introduction to mathematical analysis; and Pass in MATH3405 Differential equations, or already enrolled in this course				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Y					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate unders applications, or not being able to complete the		able to identify appropriat	e theorems or their	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
Learning Activities	Lectures				30	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods	Methods	3	Details	V	Veighting in fina	

		course grade (%)
	Examination	50
	Test	50
Required/recommended reading and online materials	W.A. Strauss: Partial Differential Equations: An Introduction, 2n D. Bleecker & G. Scordas: Basic Partial Differential Equations (L.C. Evans: Partial Differential Equations (American Mathematic	International Press)
Course Website	http://hkumath.hku.hk/course/MATH4406/	

MATH4501 Geometry (6 o	redits)			Academic Year	2014	
Offering Department	Mathemat	ics		Quota		
Course Co-ordinator		ood, Mathematics (fullwood@maths.hku.	.hk)	12222		
Teachers Involved		ood, Mathematics	,			
Course Objectives	universe i training in space. In	As geometric forms often appear in nature, the study of geometry helps us to understand better the universe in which we live. Moreover, geometry has much intrinsic beauty and the study of it is an excellent training in intuitive thinking. In this course we study the differential geometry of curves and surfaces in 3 space. In the study of regular surfaces in 3-space we exhibit geometric notions that are definable in terms of metrical properties of these surfaces alone, leading to the intrinsic geometry of surfaces.				
Course Contents & Topics		Plane and space curves, regular surfaces in three-dimensional Euclidean space, the Gauss map, Gaussian and mean curvatures, Gauss's Theorema Egregium, Gauss-Bonnet Theorem.				
Course Learning Outcomes	1. Unders 2. Be able	On successful completion of the course, students should be able to: 1. Understand the fundamental theorems on curves. 2. Be able to compute the Gaussian and mean curvatures. 3. Understand the basics of intrinsic geometry of surfaces.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	ATH2101 Linear algebra I and MATH340	01 Analysis I			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the a theorems and their applications through correctly analysing problems, clearly and elegantly presenting cor reasoning and argumentation and being able to carry out computations carefully and correctly, and vinnovative approaches to solving problems. B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate the their applications through correctly analysing problems, but with some minor inadequacies in arguments, the appropriate theorems or their applications and presentation or with some minor computational errors. C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify a theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems argument and presentation or a number of minor computational errors. D Demonstrate some understanding of key concepts and ideas by being able to correctly identify a theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing prot poor argument or presentation or with substantial computational errors. Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorem applications, or not being able to complete the solution.				senting correct logical ctly, and with some opriate theorems and rguments, identifying al errors. y identify appropriate problems with poor identify appropriate lysing problems with	
Course Type	Lecture-ba	ased course				
Course Teaching & Learning Activities	Activities Lectures Tutorials Reading	Lectures Tutorials			No. of Hours 36 12 100	
Assessment Methods and Weighting	Methods		Details		leighting in final course grade (%)	
	Examina	tion			50	
	Test				50	
Required/recommended reading and online materials	M P Do C	armo: Differential Geometry of Curves an	nd Surfaces (Prention	ce-Hall, 1976)		
Course Website	http://hkur	math.hku.hk/course/MATH4501/				

MATH4511 Introduction	MATH4511 Introduction to differentiable manifolds (6 credits) Academic Year		Academic Year	2014	
Offering Department	Mathematics		Quota		
Course Co-ordinator	Prof W K Ching, Mathematics (wching@hku.hk)	Prof W K Ching, Mathematics (wching@hku.hk)			
Teachers Involved	Prof W K Ching, Mathematics				

Course Objectives	tools for distributio	The course aims at introducing students to the notion of differentiable manifolds and basic concepts and tools for their study, such as differential forms, exterior differentiation and integration; vector fields, distributions, and integrability; and covariant differentiation through affine connections. The course also aims at presenting concrete examples that are relevant to further fields of study.				
Course Contents & Topics	Differential forms an	Review on functions of several variables, inverse mapping theorem, implicit function theorem. Differentiable manifolds: definitions and examples. Maps between manifolds, submanifolds. Differential forms and exterior differentiation. Integration on manifolds. The tangent bundle, distributions and Frobenius Theorem. Further topics.				
Course Learning Outcomes	1. Unders	On successful completion of the course, students should be able to: . Understand the basic language and concepts of modern differential geometry with examples. d. Apply the knowledge of algebra and analysis learned previously to solve geometric problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	Pass in MATH3401 Analysis I (having taken MATH4501 Geometry would be helpful; the course can also be taken concurrently with MATH4402 Analysis II)				
Offer in 2014 - 2015	N	Examination				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to theorems and their applications through correctly analysing problems, clearly and elegantly reasoning and argumentation and being able to carry out computations carefully and c innovative approaches to solving problems.				nting correct logical	
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate underst applications, or not being able to complete th		/ appropriate	theorems or their	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	3	Details		ighting in final urse grade (%)	
	Examina	tion			50	
	Test				50	
Required/recommended reading and online materials	2003) W. Booth Press, 20	Dennis Barden and Charles B. Thomas: An Introduction to Differential Manifolds, (Imperial College Press,				
Course Website		math.hku.hk/course/MATH4511/	,			

MATH4602 Scientific comp	outing (6 credits)	Academic Year	2014			
Offering Department	Mathematics	Quota				
Course Co-ordinator	Prof W K Ching, Mathematics (wching@hku.hk)					
Teachers Involved	Prof W K Ching, Mathematics	Prof W K Ching, Mathematics				
Course Objectives	This course introduces mathematical theories and computational techniques for solving various kinds of matrix computation problems that are often encountered in scientific or industrial applications.					
Course Contents & Topics	Introduction to scientific computing, systems of linear equations, direct methods, matrix norms, von Neumann series, iterative methods, eigenvalues, power method, spectral radius, Schur's Theorem, Gershgorin's Theorem, and some selected topics: multigrid methods, projection methods, recursion methods, fast Fourier transform, linear least squares, singular values, boundary value problems, partial differential equations, parallel computing, etc.					
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Apply direct method in solving a linear system. 2. Analyze the complexity of a numerical algorithm. 3. Give a proof for Schur's Theorem and Gershgorin's Theorem. 4. Apply iterative methods in solving a linear system. 5. Compute the singular values of a matrix.					
Pre-requisites (and Co-requisites and	Pass in MATH3601 Numerical analysis					

Impermissible combination)						
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Α	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and numerical algorithms and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and numerical algorithms and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems and numerical algorithms or their applications and presentation or with some minor computational errors.				
	С	·				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems and numerical algorithms, but with substantial inadequacies in applying them through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Demonstrate poor and inadequate algorithms or their applications, or r			rems and numerical	
Course Type	Lecture-	based course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lecture	S			36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		eighting in final ourse grade (%)	
	Examin	ation			50	
	Test				50	
Required/recommended reading and online materials		Michael T. Heath: Scientific Computing (McGraw Hill, 1997) Charles F. Van Loan: Introduction to Scientific Computing, Matlab Curriculum Series (Prentice Hall, 1997)				
Course Website	http://hki	umath.hku.hk/course/MATH4602	/			

MATH4902 Operations res	search II (6	edits)	Academic Year	2014		
Offering Department	Mathemat	3	Quota			
Course Co-ordinator	Dr G Han,	lathematics (ghan @maths.hku.hk)				
Teachers Involved	Dr G Han,	lathematics				
Course Objectives	programm research. with cours	objective is to provide a fundamental account of the basic results and techniques of integeramming (IP), dynamic programming (DP) and Markov decision processes (MDP) in operation arch. There is emphasis on aspects of algorithms as well as applications. The course serves, together courses on linear programming and network models, to provide essential optimization concept an ithms for more advanced studies in operations research.				
Course Contents & Topics		Integer programming and heuristics, dynamic programming (deterministic/stochastic) and Markov decisio process (discounted/average costs).				
Course Learning Outcomes	Undersprogramm Explain decision p	rul completion of the course, students should be able to: and the terminology and nomenclature appropriate to g and Markov decision process. he typical techniques employed in integer programming, cess				
	3. Demon	ate the knowledge on algorithms for a variety of problems	in operations resear	ch.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M		ulus; and	ch.		
(and Co-requisites and Impermissible combination)	Pass in M	ate the knowledge on algorithms for a variety of problems TH2101 Linear algebra I and MATH2211 Multivariable calc	ulus; and	ch.		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Pass in M.	ate the knowledge on algorithms for a variety of problems TH2101 Linear algebra I and MATH2211 Multivariable calc	culus; and ourse			
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Pass in M. Pass in M.	ate the knowledge on algorithms for a variety of problems TH2101 Linear algebra I and MATH2211 Multivariable calc	culus; and ourse			
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in M. Pass in M. N	ate the knowledge on algorithms for a variety of problems TH2101 Linear algebra I and MATH2211 Multivariable calc	by being able to identify analysing problems, cl	y basic principles learly and eleganti		
(and Co-requisites and	Pass in M Pass in M N N A+ to F	ate the knowledge on algorithms for a variety of problems TH2101 Linear algebra I and MATH2211 Multivariable calc TH3901 Operations research I, or already enrolled in this components are excellent understanding of key concepts and ideas appropriate theorems, algorithms and their applications through correct presenting correct logical reasoning and argumentation and being alternation.	Examination by being able to identify analysing problems, clole to carry out computate to identify basic priproblems, but with some	fy basic principles early and elegant! tions carefully and nciples, appropriate minor inadequacie		

		errors.				
	D		ole to identify basic principles, appropriate uacies in applying the theorems through substantial computational errors.			
	Fail		Demonstrate poor and inadequate understanding by not being able to identify basic principles, appropriate th algorithms or their applications, or not being able to complete or compute the solution.			
Course Type	Lecture-l	based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Examination			50		
	Test			50		
Required/recommended reading and online materials	P. Thie:	S. Dreyfus and A. Law: The Art and Theory of Dynamic Programming (Academic Press, 1977) P. Thie: Markov Decision Processes (COMAP, Inc. 1983) G.L. Nemhauser and L.A. Wolsey: Integer and Combinatorial Optimization (Wiley, 1988)				
Course Website	http://hku	umath.hku.hk/course/MATH4902/				

MATH4907 Numerical me	thods for fil	nancial calculus (6 credits)		Academic Year	2014	
Offering Department	Mathemat	ics		Quota		
Course Co-ordinator	Dr S P Yu	ng, Mathematics (spyung@hku.hk)				
Teachers Involved	Dr S P Yu	ng, Mathematics				
Course Objectives		This course aims at providing effective numerical methods as well as their theoretical aspects for solving problems arisen from financial derivatives and asset pricing.				
Course Contents & Topics	pricing dif	Introduction to the mathematical theory of vanilla and exotic options. Numerical methods for Black-Scholes pricing differential equations together with their performance analyses. Binomial tree methods, Monte Carlo simulations and their performance analyses.				
Course Learning Outcomes		On successful completion of the course, students should be able to: 1. Demonstrate knowledge and understanding of the martingale theory in option pricings as well a				
	financial d 2. Implem 3. Explain Scholes p		hods on the Black-S tree method and the	choles pricing differ e finite difference m	rential equation. ethod of the Blac	
Pre-requisites (and Co-requisites and mpermissible combination)	Pass in M	ATH3906 Financial calculus or equival	ent			
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate underst applications, or not being able to complete th		le to identify appropria	te theorems or their	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hour	
Learning Activities	Lectures				3	
	Tutorials				1	
	Reading	/ Self study			10	
Assessment Methods	Methods		Details		Weighting in fina course grade (%	

	Examination	50
	Test	50
Required/recommended reading and online materials	J. Strikwerda: Finite Difference Schemes and PDEs (Wads Baxter and Rennie: Financial Calculus (Cambridge Univers Wilmott, Howison and Dewynne: The mathematics of Fina 1995) Fleming and Rishel: Deterministic and Stochastic Optimal C	ity Press, 1996) incial Derivatives (Cambridge University Press,
Course Website	http://hkumath.hku.hk/course/MATH4907/	

MATH4910 Senior Mathem	natics sem	ninar (6 credits)	Academic Y	ear 2014		
Offering Department	Mathema	atics	Quota	12		
Course Co-ordinator	TBC, Ma	thematics ()				
Teachers Involved	TBC, Ma	thematics				
Course Objectives	articles a	This seminar style capstone course aims to provide students the experience of intense reading of journa articles and book chapters, followed by group discussions through which knowledge acquisition and synthesis will be attained. Students will look at particular mathematical topics in depth, and will master the topics through reading, listening, discussing and writing.				
Course Contents & Topics	Research of knowle Reading convincir construct prepared The end	This seminar course may be in the form of research seminar, reading seminar, or a combination of both. Research seminar provides first-hand research experience to students, who will discuss the advancement of knowledge brought about by the readings, and the difficulties they encounter in the research process. Reading seminar involves discussions on arguments delivered by the authors of books or articles, and how convincing the arguments are. Participants will experience the process of argumentation in the construction of knowledge and development of research idea. Student performance is manifested in their preparedness, quality of comments, responsiveness to comments and overall engagement in the seminar. The end product is a research paper or written report and oral presentations. Topics chosen by the instructors, including journal articles and book chapters.				
Course Learning Outcomes	On succe	On successful completion of the course, students should be able to				
	Critiqu Organ	Explain and discuss the contents of the topics they studied. Critique and argue about the ideas and theories of the work they studied. Organize and synthesize the material they have learned, and report orally and in writing using mathematical language.				
Pre-requisites (and Co-requisites and Impermissible combination)	MATH4X Algebra I Subject t (This cou	at least 24 credits of advanced leve (XX, or MATH6XXX) in the Mathematics I, MATH3401 Analysis I, MATH3403 Fun o approval by the Department. urse is for third and fourth year students of the students of the course is for Mathematics, and Mathematics, and Mathematics, and Mathematics.	s, and Mathematics/Physics Majors ctions of a complex variable.	including MATH330		
Offer in 2014 - 2015	N		Examination	ı		
Offer in 2015 - 2016	Y		'	'		
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of the material by lucid exposition. Engage constructively by providing insightful analyses and raising critical points in group discussion. Demonstrate clear and critical analysis, coherent synthesis, and effective application of the knowledge through writing and oral presentation using mathematical language.					
	B Demonstrate a good understanding of the material by mostly clear and effective presentation. Engage actively in group discussion most of the time by providing helpful points and asking questions that advance the discussion. Demonstrate mostly clear and effective analysis, synthesis, and application of the knowledge through writing and oral presentation using mathematical language.					
	C Demonstrate a general understanding of the material by moderately effective presentation. Engage in group discussion most of the time with some useful input. Demonstrate moderately clear and effective analysis, synthesis, and application of the knowledge through writing and oral presentation using mathematical language.					
	Demonstrate a basic but limited understanding of the material by partially effective presentation. Plays a passive role, or gives limited useful contribution to group discussion. Demonstrate limited or barely effective analysis, synthesis, and application of the knowledge through writing and oral presentation using mathematical language.					
	Fail	Demonstrate inadequate understanding of the participation in and contribution to group disc application of the knowledge through writing a	ussion. Demonstrate inadequate or ineffective	e analysis, synthesis, and		
Course Type	Project-b	ased course				
Course Teaching	Activitie	es	Details	No. of Hour		
& Learning Activities	Meeting	with supervisor	Seminars: Students take turns to give presentations to the whole class; group discussions.	3		
	Reading	g / Self study	Reading material and preparation for presentations and discussions; writing of reports/research papers.	10		
Assessment Methods and Weighting	Method	s	Details	Weighting in fina course grade (%		
	Disserta	ition	Coursework assessment: Based on class participation and group	2		

		discussions.	
	Oral presentation	Seminar presentations by students	30
	Research report	Written report / research paper: Individual and/or group reports/research papers totally no more than 10,000 words.	50
Required/recommended reading and online materials	TBC		
Course Website	http://hkumath.hku.hk/course/MATH4910/		
Additional Course Information	Nil		

MATH4911 Mathematics of	apstone p	roject (6 credits)	Academic \	Year 2014		
Offering Department	Mathema	itics	Quota			
Course Co-ordinator	TBC, Mat	thematics ()				
Teachers Involved	TBC, Mat	thematics				
Course Objectives		This course aims to provide students an experience of engaging in a project which requires integration and/or application of the mathematical knowledge they have acquired.				
Course Contents & Topics	Emphasis acquired a commu research, developm report, or	Students will work collaboratively in small groups on a project under the guidance of their supervisor(s) Emphasis of this capstone project is on the integration and/or application of mathematical knowledge acquired by the students. The project topic is not limited to academic context, but can also be extended to a community or corporate outreach project. Projects may take the form of a combination of literature research, survey, data analysis, creation of artifacts or media contents, exhibition, public lectures, development of solution plan for the problem under study, etc. Assessment may take the form of written report, oral presentation, media production, portfolio, and/or peer evaluation, etc. Topics are either chosen by the supervisor(s), or proposed by the students and approved by their supervisor(s).				
Course Learning Outcomes	On succe	essful completion of the course, students	s should be able to			
	2. Work of 3. Comm	ate and apply mathematical knowledge to the solution of the so	, , ,	suitable media usinç		
Pre-requisites (and Co-requisites and Impermissible combination)	MATH4X Subject to (This cou	at least 24 credits of advanced leve XX, or MATH6XXX) in the Mathematics of approval by the Department. It is for third and fourth year students stone course is for Mathematics, and Mathematics, and Mathematics.	, and Mathematics/Physics Majors. only.)	`		
Offer in 2014 - 2015	N		Examinatio	n		
Offer in 2015 - 2016	Υ		'			
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate excellent and creative integration and/or application of the mathematical knowledge previously acquired. Take initiative in, and collaborate highly effectively on, the project. Communicate effectively through suitable media using appropriate mathematical terms and language.				
	В	Demonstrate good integration and/or application of the mathematical knowledge previously acquired. Participate actively in, and collaborate mostly effectively on, the project. Communicate mostly effectively through suitable media using appropriate mathematical terms and language.				
	С	Demonstrate a general level of integration and/or application of the mathematical knowledge previously acquired Demonstrate moderately effective collaboration on the project. Moderately effective communication using mathematical terms and language.				
	D	Demonstrate some partial integration and/or application of the mathematical knowledge previously acquired. Demonstrate barely effective collaboration on the project. Show limited ability to effectively communicate using mathematical terms and language.				
	Fail	Demonstrate weak or poor integration and/or application of the mathematical knowledge previously acquired. Show passive participation in, and ineffective collaboration on, the project. Communicate ineffectively using mathematica terms and language.				
Course Type	Project-b	ased course				
Course Teaching	Activitie	es	Details	No. of Hour		
& Learning Activities	Meeting	with supervisor	Students meet with their supervisor(s) to present results or to discuss their progress.	2		
	Assessn	nent	Project work: Students work on their project	13		
Assessment Methods and Weighting	Method	s	Details	Weighting in fina course grade (%		
	Disserta	tion	Coursework assessment: Based on participation and collaboration throughout the whole project.	2		
			Oral presentation components of			

	Oral presentation	the project may include seminars, lectures, oral reports, audio recordings, etc.	30
	Research report	Written report / media production: This part may include written reports, booklets, exhibition materials, video productions, computer software, etc.	50
Required/recommended reading and online materials	TBC		
Course Website	http://hkumath.hku.hk/course/MATH4911/		
Additional Course Information	Nil		

MATH4966 Mathematics i	nternship	(6 credits)		Academic Year	2014		
Offering Department	Mathematic	cs		Quota			
Course Co-ordinator	Dr T W Ng	Dr T W Ng, Mathematics (ntw@maths.hku.hk)					
Teachers Involved	All teaching	All teaching staff, Mathematics					
Course Objectives	major of st knowledge	This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefits to the students to apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the department.					
Course Contents & Topics	various tas Outside the	Within the university: each student will be supervised by a staff member (supervisor), working on a project of various tasks as instructed by the supervisor. Outside the university: each student will carry out approved work under the guidance and supervision of an external supervisor.					
Course Learning Outcomes	On succes	sful completion of the course, students s	hould be able to:				
		rk experience in an industry related to ma understanding of how mathematics is us					
Pre-requisites (and Co-requisites and Impermissible combination)	MATH4XX Students a	Pass in at least 24 credits of advanced level compulsory/core mathematics courses (MATH3XX MATH4XXX, or MATH6XXX) in the Mathematics, and Mathematics/Physics Majors. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Mathematics, and Mathematics/Physics Majors students only.					
Offer in 2014 - 2015	Y 2nd	sem Summer		Examination	No Exam		
Offer in 2015 - 2016	Υ						
Course Grade	Pass/Fail						
Grade Descriptors	Pass Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work required in the job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s), colleagues, and clients in the job. Successfully fulfills the requirements set out in the Course Description regarding working hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating excellent performance in the above would be awarded a grade of "Distinction". Fail Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the job or						
	assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s), other colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding working hours, written and oral report, or evaluation by supervisor(s), etc.						
Course Type	Internship						
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Internship	work	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)		160		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)		
	Written re	port	written report, feedback and oral	employer's presentation	100		
Additional Course Information	those who Satisfactor internship Distinction' obtain the a Enrolment	Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given those who have completed Year 2. Satisfactory completion of this course can be counted towards the Capstone requirement. Details internship will be recorded on the student's transcript. This course will be assessed on "Pass, Fail a Distinction" basis. Students who are interested to enrol in this course should contact the Department obtain the approval. Enrolment of this course is not conducted via the online course selection system and should be mathrough the relevant Department/School office after approval has been obtained from the course coordinate.					

MATH4999 Mathematics	Academic Year	2014	
Offering Department	Mathematics	Quota	

Course Co-ordinator	Prof W K	Prof W K Ching, Mathematics (wching@hku.hk)					
Teachers Involved	All teaching	Il teaching staff, Mathematics					
Course Objectives	problems	The aim of the course is to provide students with the opportunity to formulate and to investigate, in depth, problems of practical interest and/or to have a foretaste of mathematical research. The work, to be done on an individual basis, is considered a highly desirable part of the training of a mathematician.					
Course Contents & Topic	superviso good star	he subject matter of the project will be determined by consultation between the student and his/her upervisor. The projects will be selected from areas of pure and applied mathematics. Students must achieve ood standing and get the approval from both the prospective supervisor and the course co-ordinator to take his course.					
Course Learning Outcomes	1. Study i 2. Analyz 3. Articula	On successful completion of the course, students should be able to: . Study independently and in depth an advanced topic that is not available in the regular curriculum. 2. Analyze and synthesize information gathered from different sources. 3. Articulate their findings and conclusions. 4. Give an exposition of their work in a written report.					
Pre-requisites (and Co-requisites and Impermissible combination)	MATH4XX Algebra I	at least 24 credits of advanced level compulsor (X, or MATH6XXX) in the Mathematics, and Mathe and MATH3401 Analysis I. tone course is for Mathematics, and Mathematics/Phys	matics/Physics Majors in				
Offer in 2014 - 2015	N		Examination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical evaluation of information drawn from a broad range of high quality sources and to reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills.					
	В	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.					
	D	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and resu appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
	Fail						
Course Type	Project-ba	ased course					
Course Teaching	Activitie	s Details		No. of Hours			
& Learning Activities	Reading		ent work & to attend & seminars	240			
Assessment Methods and Weighting	Methods	Details		Weighting in final course grade (%)			
	Dissertat	written presentat	report plus oral	100			

MATH6101 Intermediate c	omplex analysis (6 credits)	Academic Year	2014				
Offering Department	Mathematics	Quota					
Course Co-ordinator	Prof N Mok, Mathematics (nmok@hku.hk)						
Teachers Involved	Prof N Mok, Mathematics						
Course Objectives	The objective is to familiarize students with analytic, algebraic and geometric concepts and techniques in the study of Complex Analysis in a single variable beyond an introductory course on functions of a complex variable.						
Course Contents & Topics	In the course we study meromorphic functions on compact Riema surfaces using analytic and algebraic techniques. Topics on a constructions of meromorphic functions on compact Riemann surface the Mittag-Leffler Problem and the Weierstrass Problem on comp. Riemann surfaces. In the course of study of meromorphic function cohomology theories in terms of differential forms will be introducincluded. Examples of possible topics include normal families, the R theory of holomorphic mappings, potential theory in one complex var functions.	neromorphic functiones, elliptic functions, act Riemann surfaceons, sheaf cohomoloed. A choice of othe emann Mapping The	ns include the Poincare series, s and on open ogy theory and er topics will be orem, geometric				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Deal with rational functions on the Riemann Sphere and deal with elliptic functions, equivalently meromorphic functions on elliptic curves. 2. Formulate various classical existence problems on meromorphic functions and reduce them to analytic						
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	or cohomological problems, being able to solve them in certain typical cases. 3. Identify the key arguments in the proofs of various mathematical results concerning meromor functions on compact Riemann surfaces or on plain domains. 4. Identify the key elements in the theoretic foundation of various additional topics covered in the cound to make use of them in solving problems.						
Pre-requisites (and Co-requisites and Impermissible combination)		A first course in Complex Analysis such as MATH3403 Functions of a Complex Variable, and approval b the instructor.					
Offer in 2014 - 2015	Y 1s	t sem		Examination	Dec		
Offer in 2015 - 2016	Υ				'		
Course Grade	A+ to F						
Grade Descriptors	Α	Demonstrate an excellent understanding of theorems and their applications through corr reasoning and argumentation and being a innovative approaches to solving problems.	ectly analysing problems, o	clearly and elegantly pre	senting correct logical		
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.						
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.						
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate the applications, or not being able to complete the solution.						
Course Type	Lecture-b	pased course					
Course Teaching	Activitie	es	Details		No. of Hours		
& Learning Activities	Lectures	5			36		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)		
	Assignm	nents			50		
	Examina	ation	Final examination		50		
Required/recommended reading and online materials	O. Forste	R. Narasimhan: Complex Analysis in One Variable, Birkhauser 2001 (2nd edition). O. Forster: Lectures on Riemann Surfaces, Springer-Verlag 1981. J.B. Conway: Functions of One Complex Variable I, Springer-Verlag 1995. K. Chandrasekharan: Elliptic Functions, Springer-Verlag 1985.					

MATH6201 Topics in geon	netry (6 cr	edits)					Academic Year	2014	
Offering Department	Mathema	atics					Quota		
Course Co-ordinator	Dr S Wu,	Dr S Wu, Mathematics (swu@maths.hku.hk)							
Teachers Involved	Dr S Wu,	Or S Wu, Mathematics							
Course Objectives		This course introduces to students a main area of differential geometry beyond the notion of manifolds at the calculus of differential forms and prepares them to study further and to do research in geometry.							
Course Contents & Topics	to) the fol 1. Riema Laplace a 2. Sympl Hamiltoni 3. Vecto	llowing. annian ge and Dirac lectic ged ian group or bundle	ometry: affine a operators, harn ometry: symple actions, momei	and Levi-Civita nonic forms an ctic vector sp nt maps, symp lles, connecti	connection, d spinors, ap paces, symp lectic quotien on and cur	, Riemann polications lectic mar tts, convex vature, cl	nifolds, Lagrangia city theorems, loca naracteristic form	, spinor b n subma llization;	undles
	_								
Course Learning Outcomes	1. Have a	a working stand the		e calculus of o	differential for	rms beyon	d the level of MAT be ready to lear		pics i
Pre-requisites (and Co-requisites and Impermissible combination)	1. Have a 2. Unders Geometry (MATH44	a working stand the y. 402 Analy	knowledge of the keys points o	e calculus of of the particula	differential for r subject ch	rms beyon osen and		n other to	
Pre-requisites (and Co-requisites and Impermissible combination)	1. Have a 2. Unders Geometry (MATH44	a working stand the y. 402 Analy	knowledge of the keys points o	e calculus of of the particula	differential for r subject ch	rms beyon osen and H4511 Intro	be ready to lear	n other to	
Pre-requisites (and Co-requisites and	1. Have a 2. Unders Geometry (MATH44 or the app	a working stand the y. 402 Analy	knowledge of the keys points o	e calculus of of the particula	differential for r subject ch	rms beyon osen and H4511 Intro	be ready to lear	n other to	
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015	1. Have a 2. Unders Geometry (MATH44 or the app	a working stand the y. 402 Analy	knowledge of the keys points o	e calculus of of the particula	differential for r subject ch	rms beyon osen and H4511 Intro	be ready to lear	n other to	

	В	Demonstrate a good understanding of key and their applications through correctly ar identifying the appropriate theorems or their	me minor inadequacies in arguments,		
	С	Demonstrate an acceptable understanding of theorems, but with some inadequacies in a argument and presentation or a number of m			
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.			
	Fail	Demonstrate poor and inadequate unders applications, or not being able to complete the		identify appropriate theorems or their	
Course Type	Lecture-b	ased course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures	;		36	
	Reading	/ Self study		100	
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)	
	Assignm	ents		50	
	Examination			50	
Required/recommended reading and online materials	TBC				

MATH6202 Complex manif	olds (6 cred	dits)	Academic Year	2014			
Offering Department	Mathematic	cs	Quota				
Course Co-ordinator	Prof N Mok	Prof N Mok, Mathematics (nmok@hku.hk)					
Teachers Involved	Prof N Mok Dr F Ye, M	x, Mathematics athematics					
Course Objectives		his course aims to present the foundation of the theory of complex manifolds and to introduce students t variety of research topics, focusing on compact complex manifolds.					
Course Contents & Topics	cohomolog Hermitian I fundamenta Theorem, t course cor manifolds. (a) Siegel's (b) geomet (c) an introd	nis course contains an introductory part on basic notions on complex manifolds including shear thomology, cohomology theories in terms of differential forms, Hermitian and Kahler manifolds, and remitian holomorphic vector bundles. It proceeds to introduce the theory of harmonic forms, establishing namental results on compact complex manifolds including Serre duality, the Kodaira Vanishing neorem, the Kodaira Embedding Theorem and Hodge decomposition on compact Kahler manifolds. Theorem, the Kodaira Embedding Theorem and Hodge decomposition on compact Kahler manifolds. Theorem concludes with a choice of topics on analytic and geometric aspects of the theory of complex anifolds. Examples of such topics include 1) Siegel's Theorem on the field of meromorphic functions on a compact complex manifold; 2) an introduction to the deformation theory of compact complex submanifolds in a complex manifold; 3) an introduction to the deformation theory of complex structures on a compact complex manifold.					
Course Learning Outcomes	1. Grasp th global holo manifolds. 2. Grasp th make use harmonic fo 3. Grasp th Kahler mar positivity of 4. Identify the state of the s	sful completion of this course, students should be able to the notion of holomorphic line bundles, understand various amorphic sections of line bundles, and to relate them to the relationship between sheaf cohomology, de Rham co of the relationship to solve various existence problems orms. The basics of complex differential geometry such as not not provided and on Hermitian holomorphic vector bundles, are curvature and apply them to vanishing and embedding the key elements in the theoretic foundation of various are use of them in solving problems.	s ways for establishing of the embedding of co- homology and d-bar of by means of vanishitions of connections and be able to relate vaneorems.	compact comple cohomology, and ing theorems of and curvature of arious notions of			
Pre-requisites (and Co-requisites and Impermissible combination)		se in Complex Analysis such as MATH3403 Functions of Geometry such as MATH4501 Geometry, and approval between the complex of t		a first course			
Offer in 2014 - 2015	N		Examination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.						
		the appropriate theorems or their applications and presentation or with	h some minor computational	errors.			
	С	the appropriate theorems or their applications and presentation or with Demonstrate an acceptable understanding of key concepts and idea theorems, but with some inadequacies in applying the theorems the argument and presentation or a number of minor computational errors.	s by being able to correctly ough incorrectly analysing	errors.			

		theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems poor argument or presentation or with substantial computational errors. Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or applications, or not being able to complete the solution.				
	Fail					
Course Type	Lecture-ba	re-based course				
Course Teaching & Learning Activities	Activities	3	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments			50		
	Examinat	ion	Final examination			
Required/recommended reading and online materials	P. Griffiths & J. Harris: Principles of Algebraic Geometry, Pure and Applied Mathematics, W. Interscience Publishers, New York 1978. K. Kodaira: Complex Manifolds and Deformation of Complex Structures, Grundlehren der mathematisc Wissenschaften 283, Springer-Verlag, Berlin-Heidelberg 1986. N. Mok: Metric Rigidity Theorems on Hermitian Locally Symmetric Manifolds, World Scientific, Singap New Jersey 1989.					

MATH6217 Topics in finan	cial mathematics (6 credits)			Academic Year	2014	
Offering Department	Mathematics			Quota		
Course Co-ordinator	Dr J Song	Dr J Song, Mathematics (txjsong@hku.hk)				
Teachers Involved	Dr J Song	Dr J Song, Mathematics				
Course Objectives	managem	This course aims at introducing students to fundamental knowledge in financial mathematics and risk management. It can help preparing students to research or take more advanced courses in those directions.				
Course Contents & Topics	Topics wil	I be chosen among the followings:				
	(ii) Mather	(i) Investment models and portfolio theory. Interest rate modeling.(ii) Mathematics of financial derivatives, pricing and hedging. Estimation and modeling of volatilities.(iii) Risk measures and risk management.				
Course Learning Outcomes	On succes	ssful completion of this course, stud	ents should be able to:			
	 Grasp t Underst 	Understand and be able to utilize various models and results in investment and interest rate. Grasp the methodology in derivative pricings and the modeling of volatilities. Understand and be able to utilize the concept of risk measures and risk management; subject to the topics chosen that year.				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in an advanced level mathematics courses (MATH3XXX, MATH4XXX, or MATH6XXX) and subject to the approval of the course coordinator.				
Offer in 2014 - 2015	Y 1st	Y 1st sem Examination			Dec	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.					
Course Type	Lecture-ba	Lecture-based course				
Course Teaching	Activities Details		Details		No. of Hour	
& Learning Activities	Lectures				3	
	Reading / Self study			10		
Assessment Methods and Weighting	Methods	·	Details		Weighting in fina course grade (%	
	Assignme	ents			50	
	Examinat	tion			50	

		I	
Required/recommended reading and online materials	TBC		

MATH6219 Topics in applie				Academic Year	2014	
Offering Department	Mathematics			Quota		
Course Co-ordinator	Dr S P Yung, Mathematics (spyung@hku.hk)					
Teachers Involved	Dr S P Yung, Mathematics					
Course Objectives	This is a graduate to advanced undergraduate university level course on applied functional analysis, which aims at introducing to students the basic knowledge of using functional analysis on various applied topic in mathematics. This course would lay a foundation for students in studying more advanced mathematics courses.					
Course Contents & Topics	 Generalized functions (also called distributions), delta function, generalized Fourier Transform. Applications to differential equations, Fundamental solution, Green's function. Sobolev spaces, Sobolev Embedding Theorem, Trace. Hilbert space linear operator theory (bounded operators, compact operators, closed unbounded operators), spectral theory. Applications to differential equations (infinitesimal generator, semigroup of linear operators). Applications to optimization problems. Wherever needed, we shall also review techniques for Metric spaces (Category Theorem), Banach spaces (Hahn-Banach Theorem, Opening Mapping Theorem, Closed Graph Theorem and Uniform Boundedness Principle) and Hilbert spaces (Orthogonality and best approximation, Fourier isometry). 					
Course Learning Outcomes		ssful completion of this course, students	•••			
3	 Use generalized functions and their Fourier transform on practice problems. Understand Sobolev spaces and how to use them in the process of solving differential equations. Understand Hilbert space linear operator theory and be able to use it in solving differential equations. Know how to apply these results to optimization problems. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH3401 Analysis I and MATH4404 Functional Analysis, or approval of the course teacher.					
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.					
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods Details		Details		eighting in fina ourse grade (%	
	Assignments 50					
	Examina				50	
Required/recommended reading and online materials	TBC					

MATH6501 Topics in algebra (6 credits)		Academic Year	2014		
Offering Department	Mathematics Quota				
Course Co-ordinator	Prof J T Yu, Mathematics (yujt@hku.hk)				
Teachers Involved	Prof J T Yu, Mathematics				
Course Objectives	To provide students specializing in mathematics with the opportunity to study some topics in algebra in				

	greater depth.					
Course Contents & Topics	A selection of advanced topics in algebra such as group theory, rings and modules, Galois theory, quadratic forms, multilinear algebra, algebraic number theory, group representation, introduction to commutative algebra, Grobner basis theory, introduction to algebraic geometry. The selection may vary from year to year.					
Course Learning Outcomes	On succes	ssful completion of the course, studen	ts should be able to:			
		 Acquire knowledge in the covered topics to considerable depth. If he/she wishes, pursue more advanced studies in areas of algebra. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M.	Pass in MATH4302 Algebra II				
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Y					
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Reading	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents	coursework assess	sment	50	
	Examination		One 2.5-hour writte	en examination	50	
Required/recommended reading and online materials	To be decided by the course instructor.					
Course Website	http://hkur	nath.hku.hk/course/MATH6501/				

MATH6502 Topics in appli	ed discrete	mathematics (6 credits)	Academic Year	2014				
Offering Department	Mathemati	cs	Quota					
Course Co-ordinator	Prof W Za	Prof W Zang, Mathematics (wzang@maths.hku.hk)						
Teachers Involved	Prof W Za	ng, Mathematics						
Course Objectives	To provide	students with the opportunity to study some further topics i	n applied discrete ma	athematics.				
Course Contents & Topics	A selection of advanced topics in discrete mathematics, which may include algebraic coding theory, cryptography, discrete optimization, extremal combinatorics, and algebraic and probabilistic methods in discrete mathematics. The selection may vary from year to year.							
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Demonstrate knowledge and understanding of some research areas of applied discrete mathematics. 2. Solve various discrete mathematics problems using some advanced techniques.							
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in M	ATH3301 Algebra I and MATH3600 Discrete mathematics						
Offer in 2014 - 2015	N		Examination					
Offer in 2015 - 2016	N							
Course Grade	A+ to F							
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.							
	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments,							

		identifying the appropriate theorems or	their applications and presentation or with some r	ninor computational errors.			
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify approximate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with argument and presentation or a number of minor computational errors.					
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail		Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or applications, or not being able to complete the solution.				
Course Type	Lecture-b	ased course					
Course Teaching & Learning Activities	Activities		Details	No. of Hours			
a Learning Activities	Lectures			36			
	Reading / Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments		coursework assessment	50			
	Examination		One 2.5-hour written examination	50			
Required/recommended reading and online materials	Instructor	Instructor's lecture notes.					
Course Website	http://hku	math.hku.hk/course/MATH6502/					

MATH6503 Topics in math credits)	nematical p	programming and optimization (6	Academic Yea	r 2014			
Offering Department	Mathema	tics	Quota				
Course Co-ordinator	Prof W Za	ang, Mathematics (wzang@maths.hku.hk)					
Teachers Involved	Prof W Za	Prof W Zang, Mathematics					
Course Objectives		n greater depth of some special topics in math for students in Operations Research or related		nization. It is mainly			
Course Contents & Topics	multi-obje	on of advanced topics, which may include con- ctive programming and goal programming; may vary from year to year.					
Course Learning Outcomes	Undersoptimizati Demor	On successful completion of the course, students should be able to: 1. Understand the advanced concept and approach of the mathematical programming topic(s) and/or optimization approaches as appropriate in Operations Research. 2. Demonstrate knowledge and understanding of the underlying theory and techniques of the various formulations and algorithms plus their extensions.					
Pre-requisites (and Co-requisites and Impermissible combination)		MATH3901 Operations research I, MATH39 is research II	904 Introduction to optimization	n and MATH4902			
Offer in 2014 - 2015	N		Examination				
Offer in 2015 - 2016	Υ		'	· ·			
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and to solve problems with some innovative approaches.						
	B Demonstrate a good understanding of key concepts and ideas by being able to identify appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.						
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail	Demonstrate poor and inadequate understanding tapplications, or not being able to complete the solution		iate theorems or their			
Course Type	Lecture-b	ased course					
Course Teaching	Activitie	s Deta	ils	No. of Hours			
& Learning Activities	Lectures			36			
	Reading	/ Self study		100			
Assessment Methods and Weighting	Methods	Deta	ils	Weighting in fina			

	Assignments	coursework assessment based on assignments and two class tests	50			
	Examination	One 2.5-hour written examination	50			
Required/recommended reading and online materials	M.S. Bazaraa and C.M. Shetty, Nonlinear Programming, 2nd edition (John Wiley & Sons, 1993) S.P. Bradley, A.C. Hax and T. Magnanti, Applied Mathematical Programming (Addison-Wesley, 1977) N. Christofides et al (ed.): Combinatorial Optimization (John Wiley & Sons, 1979) S.S. Rao, Optimization Theory and Applications (Wiley Eastern Ltd., 1978) G. Nemhauser and L. Wolsey, Integer and Combinatorial Optimization (John Wiley & Sons, 1988) J.P. Ignizio: Introduction to Linear Goal Programming (Beverly Hills: Sage, 1985)					
Course Website	http://hkumath.hku.hk/course/MATH6503/					

MATH6504 Geometric top	ology (6 cre	edits)		Academic Year	2014		
Offering Department	Mathemati	cs		Quota			
Course Co-ordinator	Dr Z Hua,	Mathematics (huazheng@maths.hku.h	hk)				
Teachers Involved	Dr Z Hua,	Mathematics					
Course Objectives		This course gives a geometric introduction to some of the methods of algebraic topology. The emphasis throughout will be on the geometric motivations and applications of the theory.					
Course Contents & Topics		Continuity. Compactness. Connectedness. The fundamental group. Triangulations and classification of surfaces. Theory and applications of simplicial homology. Theory of covering spaces. Theory of attaching spaces.					
Course Learning Outcomes	1. Underst	On successful completion of the course, students should be able to: 1. Understand basic ideas and constructions which are important both in pursuing the deeper theories as well as in many applications in algebraic topology. 2. Understand the ideas of attaching space, complexes, lifting and extension properties, and surgery on manifolds.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ma	ATH3301 Algebra I and MATH3401 An	nalysis I				
Offer in 2014 - 2015	N		ı	Examination			
Offer in 2015 - 2016	Υ		·				
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.					
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.					
	С	C Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.					
	D	D Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.					
	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.						
		applications, or not being able to complete the			theorems or their		
Course Type		applications, or not being able to complete the			theorems or their		
Course Teaching		ased course			No. of Hours		
Course Type Course Teaching & Learning Activities	Lecture-ba	ased course	e solution.		No. of Hours		
Course Teaching	Lecture-ba Activities Lectures	ased course	e solution.		No. of Hours		
Course Teaching	Lecture-ba Activities Lectures	ased course S / Self study	e solution.		No. of Hours 36 100 eighting in final		
Course Teaching & Learning Activities Assessment Methods	Lecture-ba Activities Lectures Reading /	ased course S / Self study	e solution. Details	C	No. of Hours 36 100 eighting in final ourse grade (%)		
Course Teaching & Learning Activities Assessment Methods	Lecture-ba Activities Lectures Reading / Methods	ased course Self study	Details Details	ent	No. of Hours 36 100 eighting in fina ourse grade (%)		
Course Teaching & Learning Activities Assessment Methods	Lecture-ba Activities Lectures Reading / Methods Assignme Examinat M.A. Arms	ased course Self study	Details Details coursework assessment one 2.5-hour written of UTM)	ent examination			

MATH6505 Real analysis	Academic Year	2014				
Offering Department	Mathematics					
Course Co-ordinator	Prof W S Cheung, Mathematics (wscheung@maths.hku.hk)	Prof W S Cheung, Mathematics (wscheung@maths.hku.hk)				
Teachers Involved	Prof W S Cheung, Mathematics					

Course Objectives	The aim of integral.	The aim of the course is to introduce the basic ideas and techniques of measure theory and the Lebesgue integral.					
Course Contents & Topics	The LebeDifferentcontinuityGeneralconvergen	 Lebesgue Measure on R: Measurable sets and Lebesgue measure, Measurable functions The Lebesgue Integral: The Lebesgue integral, modes of convergence Differentiation and Integration: Functions of bounded variation, Differentiation of an integral, absolute continuity General Measure and Integration Theory: Measurable spaces, measurable functions, integration, convergence theorems, the Radon-Nikodym theorem The L^p Spaces: The L^p spaces, convergence and completeness, bounded linear functionals 					
Course Learning Outcomes	Describe Construuseful inte	On successful completion of the course, students should be able to: 1. Describe basic properties of Lebesgue measure and measurable functions. 2. Construct the Lebesgue integral, elucidate its basic properties and appreciate the existence of other useful integration theories besides Riemann's. 3. Understand the basic features of L^p spaces.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ma	Pass in MATH3401 Analysis I					
Offer in 2014 - 2015	Y 2nd	sem	Examir	nation	May		
Offer in 2015 - 2016	Υ		ı		· ·		
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate a thorough understanding of all concepts and ideas by being able to draw complex connections among various concepts and apply the theorems through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation, and with some innovative approaches to solving problems.					
	В	B Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, reasoning, identifying the appropriate theorems, applications, or presentation.					
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with acceptable argument and presentation.					
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation.					
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, and not being able to complete the solution.					
Course Type	Lecture-ba	ased course					
Course Teaching & Learning Activities	Activities	5	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Reading /	Self study			100		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)		
	Assignme	ents	coursework assessme comprising one mid-term and assignments		30		
	Examinat	ion	One 2.5-hour written examination	final	70		
Required/recommended reading and online materials		en: Real Analysis, Collier MacMillan Real and Complex Analysis, McGraw I	Hill				
Course Website	http://hkun	nath.hku.hk/course/MATH6505/					

MATH7101 Intermediate complex analysis (6 credits) Academic Year 2014							
Offering Department	Mathematics	Quota					
Course Co-ordinator	Prof N Mok, Mathematics (nmok@hku.hk)	Prof N Mok, Mathematics (nmok@hku.hk)					
Teachers Involved	Prof N Mok, Mathematics						
Course Objectives		The objective is to familiarize students with analytic, algebraic and geometric concepts and techniques in the study of Complex Analysis in a single variable beyond an introductory course on functions of a complex variable.					
Course Contents & Topics	surfaces using analytic and algebraic techniques. Topics on m constructions of meromorphic functions on compact Riemann surface the Mittag-Leffler Problem and the Weierstrass Problem on compa Riemann surfaces. In the course of study of meromorphic function cohomology theories in terms of differential forms will be introduced included. Examples of possible topics include normal families, the Ri	In the course we study meromorphic functions on compact Riemann surfaces and on open Riemann surfaces using analytic and algebraic techniques. Topics on meromorphic functions include the constructions of meromorphic functions on compact Riemann surfaces, elliptic functions, Poincare series, the Mittag-Leffler Problem and the Weierstrass Problem on compact Riemann surfaces and on open Riemann surfaces. In the course of study of meromorphic functions, sheaf cohomology theory and cohomology theories in terms of differential forms will be introduced. A choice of other topics will be included. Examples of possible topics include normal families, the Riemann Mapping Theorem, geometric theory of holomorphic mappings, potential theory in one complex variable, complex dynamics, and special					
Course Learning Outcomes	On successful completion of this course, students should be able to:						
	1. Deal with rational functions on the Riemann Sphere and deal	with elliptic function	ns, equivalently				

	2. Formul or cohom 3. Identify functions 4. Identify	meromorphic functions on elliptic curves. 2. Formulate various classical existence problems on meromorphic functions and reduce them to ana or cohomological problems, being able to solve them in certain typical cases. 3. Identify the key arguments in the proofs of various mathematical results concerning meromorp functions on compact Riemann surfaces or on plain domains. 4. Identify the key elements in the theoretic foundation of various additional topics covered in the couland to make use of them in solving problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	A first cou	urse in Complex Analysis such as MAT ctor.	H3403 Functions of a	Complex Variabl	e, and approval by	
Offer in 2014 - 2015	Y 1st	sem	1	Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.				
	В	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.				
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.				
	D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.				
	Fail	Fail Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Assignm	ents			50	
	Examina	Examination			50	
Required/recommended reading and online materials	O. Forste J.B. Conv	Examination Final examination 50 R. Narasimhan: Complex Analysis in One Variable, Birkhauser 2001 (2nd edition). O. Forster: Lectures on Riemann Surfaces, Springer-Verlag 1981. J.B. Conway: Functions of One Complex Variable I, Springer-Verlag 1995. K. Chandrasekharan: Elliptic Functions, Springer-Verlag 1985.				

MATH7505 Real analysis (credits	s)			Academic Year	2014	
Offering Department	Mathem	matics			Quota		
Course Co-ordinator	Prof W	S Cheung, Ma	athematics (wscheung@mati	hs.hku.hk)			
Teachers Involved	Prof W	Prof W S Cheung, Mathematics					
Course Objectives		The aim of the course is to introduce the basic ideas and techniques of measure theory and the Lebesgu integral.					
Course Contents & Topics	- The Le - Differe continui - Gene converg	- Lebesgue Measure on R: Measurable sets and Lebesgue measure, Measurable functions - The Lebesgue Integral: The Lebesgue integral, modes of convergence - Differentiation and Integration: Functions of bounded variation, Differentiation of an integral, absolute continuity - General Measure and Integration Theory: Measurable spaces, measurable functions, integration, convergence theorems, the Radon-Nikodym theorem - The L^p Spaces: The L^p spaces, convergence and completeness, bounded linear functionals					
Course Learning Outcomes	1. Desc 2. Cons useful ir	cribe basic pro struct the Leb integration the	etion of the course, students operties of Lebesgue measure lesgue integral, elucidate its ories besides Riemann's. Isic features of L^p spaces.	e and measurable f		existence of othe	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in	n MATH3401 A	Analysis I				
Offer in 2014 - 2015	Y 2	2nd sem			Examination	May	
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F	•					
Grade Descriptors	A	various co	ate a thorough understanding of all concepts and apply the theorems thrical reasoning and argumentation, a	ough correctly analysin	g problems, clearly and	d elegantly presenting	

	В	and their applications through correctly analysing problems, but with some minor inadequacies in arguments reasoning, identifying the appropriate theorems, applications, or presentation.					
	С	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify app theorems, but with some inadequacies in applying the theorems through incorrectly analysing problem acceptable argument and presentation.					
	D	Demonstrate some understanding of key theorems, but with substantial inadequacies poor argument or presentation.					
	Fail		Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or tl applications, and not being able to complete the solution.				
Course Type	Lecture-b	ased course					
Course Teaching & Learning Activities	Activities		Details	No. of Hours			
a Learning Activities	Lectures			36			
	Reading / Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments		coursework assessment comprising one mid-term test and assignments	30			
	Examination		One 2.5-hour written final examination	70			
Required/recommended reading and online materials		H.L. Royden: Real Analysis, Collier MacMillan W. Rudin: Real and Complex Analysis, McGraw Hill					
Course Website	http://hkur	math.hku.hk/course/MATH6505/					

PHYS1050 Physics for eng		dudonta (o oreulta)		Academic Year	2014		
Offering Department	Physics			Quota			
Course Co-ordinator	Prof M H	Xie, Physics (mhxie@hku.hk)					
Teachers Involved		Xie, Physics u, Physics					
Course Objectives		This course offers a comprehensive training of physics for engineers. It covers the major physical laws of mechanics, electricity and magnetism. A calculus-based approach is adopted.					
Course Contents & Topics	Units and Motion, F Polygon a Rigid Bod circuits, M law, Amp	This course will introduce and discuss the following topics: Units and Dimensional Analysis, Motion of a Particle in One and Two Dimensions, Newton's Laws of Motion, Friction, Curvilinear and Circular Motion on a Plane, Force, Impulse and Momentum, Force Polygon and Static Equilibrium, Work and Energy, System of Particles, Moment of Inertia and Rotation of a Rigid Body, Simple Harmonic Motion and Pendulum; Electrostatic Fields and Potential, Gauss's Law, DC circuits, Magnetic field due to Moving Charges, Force on a Moving Charge in Magnetic Field, Biot-Savart law, Ampere's law, Electromagnetic Induction, Faraday's Law, Eddy Currents, AC circuits, Phases in Capacitive and Inductive Circuits, Power, DC and AC Generators, Transformer.					
Course Learning Outcomes	On succe	On successful completion of this course, students should be able to:					
	 Apply t Analyze 	pe and explain the physical principle these principles to situations of the pe and solve basic problems using the and interpret experimental data to	physical and engineering ne calculus-based approa	yworld. ach.			
Pre-requisites (and Co-requisites and Impermissible combination)		r above in HKDSE Physics or Comb rse is exclusive for Engineering stud		ics components or e	quivalent		
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.						
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.					
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.						
Course Type	Lecture w	rith laboratory component course					
Course Teaching	Activitie	S	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Laborato				6		
	Tutorials	•			3		
		/ Self study			72		
A M 1 1	Troduing	, <u></u>			12		
Assessment Methods and Weighting	Methods	3	Details		Veighting in fina course grade (%		
	Assignm	ents			10		
	Examina	tion	2-hour written exa	m	70		
	Laborato	ry reports			10		
	Test				10		
Required/recommended reading and online materials	R. Serwa	otes provided by Course Coordinato y and J.W. Jewett: Physics for Scien ght: Physics for Scientists and Engin	ntists and Engineers (Th		dition)		

PHYS1055 How things work	Academic Year	2014	
Offering Department	Physics	Quota	
Course Co-ordinator	Dr M K Yip, Physics (mankit@bohr.physics.hku.hk)		

Teachers Involved	Dr M K Yi	p, Physics				
Course Objectives	life. The c Logical th Students	se is designed for students in all discip ourse covers the working principles a inking and appreciation of science are trained to develop scientific intu- life can be predictable.	nd mechanisms of thare emphasized with	ne things and pher n mathematics ke	omena around us. pt at a minimum.	
Course Contents & Topics	application imaging for the mo	clude: the science in the household and are explored with simple and lucid or diagnosis and the magnetic levitated adern technology. Contents of the contents and technology.	explanations. Develor trains in public trans	opments in optical portation are intro-	recording, medical duced as examples	
Course Learning Outcomes	1. Describ issues in c 2. Demons 3. Criticize	essful completion of this course, student the and discuss the physical principles to daily life. Strate their knowledge to related topics and express views in logical and effective the significance of science and tections.	that are behind the host squalitatively. ctive ways.	ousehold appliance	es and the scientific	
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	Y 2nd	Isem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abil knowledge to solve problems. Organization a	ities, logical and coherent	thinking. Show very litt	le or no ability to apply	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				8	
	Reading	/ Self study			80	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents			25	
	Examinat	tion	2-hour written example	m	50	
	Presenta	tion			25	
Required/recommended reading and online materials		otes provided by Course Coordinator omfield: How Things Work: The Phys	ics of Everyday Life	(John Wiley & Sc	ons, Inc, 2008, 3rd	
Course Website	http://www	v.physics.hku.hk/~phys1055/				

PHYS1056 Weather and c	limate (6 credits)	Academic Year	2014
Offering Department	Physics	Quota	
Course Co-ordinator	Dr K M Lee, Physics (kmlee @lily.physics.hku.hk)		
Teachers involved	Dr K M Lee, Physics Dr T C Lee, Hong Kong Observatory Dr P W Li, Hong Kong Observatory Mr W K Wong, Hong Kong Observatory		
Course Objectives	Weather and climate play an important role in human activities a introduce to students the fundamentals of weather, climate and clim in the scientific and technological advancements.		
Course Contents & Topics	The course will encompass topics on: basic physical principles temperature, humidity, cold/warm fronts, thunderstorms and trop analysis, forecast and climate. Through real life examples, stu	ical cyclones; introd	uctory weather
	400		

Course Learning Outcomes	Experts fi weather climatolog visit to the and clima	elimate science and interpretation of norm the Hong Kong Observatory (HI forecasts, public weather services gy of Hong Kong, and climate change HKO to study the meteorological fate.	KO) will participate in the cours , local severe weather phen ge. They will also supervise co cilities and understand the ope	se to cover comena, tr ourse proje	aspects on daily opical cyclones, cts that involve a	
Course Learning Outcomes	1. Recall 2. Apply internet o 3. Identify the world 4. Explair	the basic principles of weather and cl the principles to interpret weather / r media. r and explain the differences of weath	imate. climate information, for exampler and climate in Hong Kong a and its potential impacts.			
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	N		Exam	ination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				8	
	Reading	/ Self study			80	
Assessment Methods and Weighting	Methods	5	Details		Veighting in final course grade (%)	
	Assignm	ents			25	
	Examina	tion	2-hour written exam		50	
	Test				25	
Required/recommended reading and online materials		otes provided by Course Coordinator Lutgens and Edward Tarbuck: The A		Hall, 2013)		
Course Website	http://www	v.physics.hku.hk/~phys0629/				
	1	1 7				

PHYS1057 Kitchen science	e (6 credits)	Academic Year	2014
Offering Department	Physics	Quota	
Course Co-ordinator	Prof A B Djurisic, Physics (dalek@hku.hk)		
Teachers Involved	Prof A B Djurisic, Physics		
Course Objectives	The course aims to improve students' understanding of basic science related to food and cooking and to develop their critical thinking skills.	behind the common	daily activities
Course Contents & Topics	The course will introduce basic scientific concepts and principles methods of food preparation, as well as kitchen tools. The introduced of and practical demonstrations. The topics include: basic food molecules (water, carbohydrates, fats, p foams and bubbles (various examples, beer, sodas, ice-cream); co sauces, jelly); crystallization (sugar, sugar syrups, honey, chocolate cooking processes and chemical reactions (Maillard reactions, carame rising dough with application to cakes, bread and cookies; fermentatical dairy products, tofu); pH values in cooking, natural and artificial f molecular gastronomy (novel flavors and textures); principles of oper stick cookware, pressure cookers, induction heating ranges, microwave	concepts will be illust rotein); lloids, emulsions, ge); taste and flavor (i lization, etc.); chemic on (alcoholic bevera ood colorings, culina ation of kitchen tools	rated in recipes elation (various herbs, spices); cal reactions for ges, fermented ary curiosities;

Course Learning Outcomes	1. Describe 2. Explain 3. Illustrate 4. Analyze	how preparation method affects	n tools encountered in daily life. esses involved in food preparation		for performing	
Pre-requisites (and Co-requisites and Impermissible combination)	NIL					
Offer in 2014 - 2015	N		Exa	mination		
Offer in 2015 - 2016	N		'			
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show strong	advanced level of extensive knowledge ar ng analytical and critical abilities and logic e to a wide range of complex, familiar an onal skills.	al thinking, with e	evidence of original	
	В	the course learning outcomes. Show	a broad range of knowledge and skills re evidence of analytical and critical abilities unfamiliar situations. Apply effective organ	s and logical thin	king, and ability to	
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critic	command of knowledge and skills require al abilities, logical and coherent thinking. ation and presentational skills are minimal	Show very little o	r no ability to apply	
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials		inlcuding demonstration hours)	(12	24	
	Reading /	Self study			72	
Assessment Methods and Weighting	Methods		Details		eighting in final ourse grade (%)	
	Assignme	nts	essay & student presentat	tions	70	
	Examinati	on			30	
Required/recommended reading and online materials	T. Lister ar S. T. Beck R. L. Wolk Peter Barh Inquisitive	ett: The Science of Chocolate (Re: What Einstein Told His Cook (am: The Science of Cooking (Scook (Exploratorium, Henry Holt	ator stry (Royal Society of Chemistry, oyal Society of Chemistry, 2005) W.W. Norton & Company Inc., Ne Springer-Verlag, Berlin, 2001) A. and Company, LLC, New York, 1 nce and Lore of the Kitchen (Harp	w York, 2002 Gardiner and 998)		

PHYS1150 Problem solvin	g in physics (6 credits)	Academic Year	2014
Offering Department	Physics	Quota	
Course Co-ordinator	Dr K M Lee, Physics (kmlee @lily.physics.hku.hk)		
Teachers Involved	Dr K M Lee, Physics		
Course Objectives	This course provides a basic training on the methods and tools the prepares students the necessary knowledge to learn the subject. See methods and skills through tackling physical problems. It is completed Methods in Physics I. This course can be regarded as a survival guident of the provided Hermitian Course of the methods and survival guident of the provided Hermitian Course of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and tools the prepared survival guident of the methods and skills through tackling physical problems. It is complete the methods and the prepared survival guident of the prepared survival guident of the methods and the prepared survival guident of the prepared survival guident of the guident o	Students will explore e in itself, or may al	the basic ideas
Course Contents & Topics	This course introduces the principles and theories of various tools the its problems. Topics include: Dimensional analysis, algebraic methocalculus approach and geometric approach, etc. Applications to propose solving skills are discussed.	d, vectorial method,	graphical method
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. State physical systems by the language of mathematics and emptoread physics. 2. Apply calculus to solve problems. 3. Review the features of various solving tools in physics as well as a solving physical problems. 4. Describe the connections between mathematical equations and pless. Formulate and operate physical problems both qualitatively and questions. 6. Interpret and judge the physical meaning of result after calculations.	oloy mathematical lo plan and select appropriately problems. Juntitatively.	

Impermissible combination)	may be a	Illowed to take this course.	, , , , , , , , , , , , , , , , , , , ,		Physics by inquiry
Offer in 2014 - 2015	Y 2n	d sem	Exan	nination	May
Offer in 2015 - 2016	Υ		1		'
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective observation skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective observation skills and techniques. Correct use of data of results to draw appropriate conclusions.				
	С	learning outcomes. Show evidence of knowledge to most familiar situation	command of knowledge and skills requi of some analytical and critical abilities and s. Apply moderately effective organizations s and techniques. Mostly correct but some	d logical thinking onal and preser	g, and ability to apply ntational skills. Apply
	D				
	Fail	outcomes. Lack of analytical and crit knowledge to solve problems. Orga	command of knowledge and skills requi cal abilities, logical and coherent thinking. nization and presentational skills are min o skills and techniques. Misuse of data	Show very little nimally effective	or no ability to apply or ineffective. Apply
Course Type	Lecture v	vith laboratory component course			
Course Teaching	Lecture v		Details		No. of Hours
Course Teaching		es	Details		No. of Hours
Course Teaching	Activitie	es :	Details		
Course Teaching	Activitie	es S Ory	Details		36
Course Teaching	Activitie Lectures Laborato Tutorials	es S Ory	Details		36 6
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Activitie Lectures Laborato Tutorials	es s orry s / Self study	Details Details		36 6 8
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Laborato Tutorials Reading	es s pry s / Self study			36 6 8 80 Veighting in final
Course Teaching & Learning Activities Assessment Methods	Activitie Lectures Laborato Tutorials Reading Methods	es s ory s / Self study s			36 6 8 80 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods	Activitie Lectures Laborato Tutorials Reading Methods Assignm Examina	es s ory s / Self study s	Details		36 6 8 80 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods	Activitie Lectures Laborato Tutorials Reading Methods Assignm Examina	ess s s ory s // Self study s enents stion	Details		36 6 8 80 Veighting in final course grade (%) 20 50
Course Teaching & Learning Activities Assessment Methods	Activitie Lectures Laborato Tutorials Reading Methods Assignm Examina Laborato Test	ess s s ory s // Self study s enents stion	Details 2-hour written exam		36 6 8 80 Weighting in final course grade (%) 20 50

PHYS1240 Physics by inqu	iry (6 credits)	Academic Year	2014		
Offering Department	Physics	Quota			
Course Co-ordinator	Dr J C S Pun, Physics (jcspun@hku.hk)				
Teachers Involved	Dr J C S Pun, Physics				
Course Objectives	This course aims at providing students a solid background and knowledge in physics as well as it connection with our daily life phenomena and activities.				
Course Contents & Topics	The course has a general coverage in most physics topics an differential and integral calculus. Emphasis will be stressed on phenomena in daily life through qualitative and simple quantitative Mechanics, Heat, Optics, Waves, Electricity and Magnetism.	the understanding of	various physica		
Course Learning Outcomes	On successful completion of the course, students should be able to 1. Describe and distinguish the concepts and principles in introduce 2. Recognize the underlying physical principles behind various dai 3. Explain physical phenomena using proper physical laws and the 4. Apply simple mathematical techniques for quantitative analysis 5. Analyse data of physics experiments.	tory study of physics. ly life phenomena. eories.	lems.		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL Not for students with level 3 or above in HKDSE Physics; and PHYS1050 Physics for engineering students or already enrolled in Not for students who have passed in PHYS1250 Fundamental phy	this course; and	•		
Offer in 2014 - 2015	Y 1st sem	Examination	Dec		

Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-l	based course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lecture	S		36		
	Tutorial	S		12		
	Reading / Self study			80		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignn	nents		20		
	Examin	ation	2-hour written exam	50		
	Test			30		
Required/recommended reading and online materials	John D. Paul G. I	Hewitt: Conceptual Physics (Addi	: Introduction to Physics (John Wiley	,		

PHYS1250 Fundamental ph	ysics (6 cr	edits)	Academic Year	2014
Offering Department	Physics		Quota	
Course Co-ordinator	Dr M K Yip	, Physics (mankit@bohr.physics.hku.hk)		
Teachers Involved	Dr M K Yip	, Physics		
Course Objectives	students w students w	e covers the fundamental blocks in physics in one sem ho are planning to take physics, astronomy, or mathema ho intend to take physics or astronomy as minor. Concep thematical treatment is moderate.	atics/physics as majo	or. It also serves
Course Contents & Topics		clude: Mechanics, Wave Motions, Geometric and Fignetism, and Modern Physics.	Physical Optics, Th	nermodynamics,
Course Learning Outcomes	 Describe Apply th world. Analyse 	sful completion of this course, students should be able to: and explain the fundamental physical principles. ese principles, together with logical and mathematical re and solve problems with the aids of mathematics. and interpret experimental data to examine the physical lateral experimental data.	Ç.	s of the physical
Pre-requisites (and Co-requisites and Impermissible combination)	Students w may be allo	above in HKDSE Physics or equivalent; ithout Level 3 or above in HKDSE Physics but having a powed to take this course; dents who have passed in PHYS1050 Physics for engine		. , , ,
Offer in 2014 - 2015	Y 1st s	em 2nd sem	Examination	Dec May
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive kno course learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex, feffective organizational and presentational skills. Apply highly effective and results to draw appropriate and insightful conclusions.	and logical thinking, with amiliar and unfamiliar situ	evidence of original ations. Apply highly
	В	Demonstrate substantial command of a broad range of knowledge ar the course learning outcomes. Show evidence of analytical and critic apply knowledge to familiar and some unfamiliar situations. Apply effective lab skills and techniques. Correct use of data of results	cal abilities and logical the ective organizational and	nking, and ability to presentational skills.
	С	Demonstrate general but incomplete command of knowledge and sk learning outcomes. Show evidence of some analytical and critical abi		

			s. Apply moderately effective organization hniques. Mostly correct but some erroneo	
	D	outcomes. Show evidence of some of Show limited ability to apply knowled	and of knowledge and skills required for att coherent and logical thinking, but with limi dge to solve problems. Apply limited or be ective lab skills and techniques. Limited ab	ted analytical and critical abilities. parely effective organizational and
	Fail	outcomes. Lack of analytical and critic knowledge to solve problems. Organ	command of knowledge and skills require al abilities, logical and coherent thinking. S ization and presentational skills are minin skills and techniques. Misuse of data a	show very little or no ability to apply nally effective or ineffective. Apply
Course Type	Lecture v	with laboratory component course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
& Learning Activities	Lectures			36
	Laboratory			6
	Tutorials			8
	Reading	g / Self study		80
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)
	Assignments			10
	Examina	ation	2-hour written exam	50
	Laborate	ory reports		15
	Test			25
Required/recommended reading and online materials	Raymono edition)	notes provided by Course Coordina d A. Serway and John W. Jewet . Walker: Physics (Prentice Hall, 2	t: Physics for Scientists and Engi	ineers (Thomson, 2011, 8th
Course Website	http://ww	w.physics.hku.hk/~phys1250/		

	niverse (6 c	redits)	Academic Year	2014		
Offering Department	Physics		Quota			
Course Co-ordinator	Dr K M Lee	e, Physics (kmlee@lily.physics.hku.hk)				
Teachers Involved	Dr K M Lee	e (Sem 1 and 2), Physics				
Course Objectives		al education course is designed for students in all discipliny, physics, and higher mathematics is required, but will h		o prior l	knowledg	
Course Contents & Topics	physics of cosmology and how o	Topics covered include the observational aspect of astronomy (including constellations and planets), the physics of our solar system, and our own Sun, stars and their evolution, galaxies, blackholes, and cosmology. It also provides students with a basic understanding of the relationship of astronomy to life and how our nature works on the macroscopic level. Students are expected to participate actively in the night sky observations.				
Course Learning Outcomes	1. Identify galaxies), 2. Use the 3. Review discovery of	sful completion of this course, students should be able to: and describe the major objects in our Solar System a and explain their main properties. celestial sphere model to describe the apparent trajectori the evolution of the world-view from the geocentric mo of the expansion of the universe on our world-view. uantitative physical laws, including Kepler's three laws gravitation, Doppler shift formula and Hubble's law to ca	and our universe (incides of celestial objects odel to the heliocentrical of planetary motion,	s. ic mode Newto	el and the	
		the evolution of stars and the evolution of the universe. inicate astronomical problems and solutions using appr				
(and Co-requisites and	5. Explain 6. Commu	the evolution of stars and the evolution of the universe. inicate astronomical problems and solutions using appr				
(and Co-requisites and Impermissible combination)	5. Explain 6. Commu good Engli NIL	the evolution of stars and the evolution of the universe. inicate astronomical problems and solutions using appr				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	5. Explain 6. Commu good Engli NIL	the evolution of stars and the evolution of the universe. nicate astronomical problems and solutions using appr sh.	ropriate astronomical	termine	ology an	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	5. Explain 6. Commu good Engli NIL	the evolution of stars and the evolution of the universe. nicate astronomical problems and solutions using appr sh.	ropriate astronomical	termine	ology an	
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	5. Explain 6. Commu good Engli NIL Y 1st s	the evolution of stars and the evolution of the universe. nicate astronomical problems and solutions using appr sh.	Examination Examination nowledge and skills require as and logical thinking, wit, familiar and unfamiliar si	Dec	May May aining all these of origina Apply highly	

	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the cours learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to app knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Appl moderately effective observation skills and techniques. Mostly correct but some erroneous use of data and results draw appropriate conclusions.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective observation skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective observation skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.			
Course Type	Lecture with laboratory component course				
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Laboratory			12	
	Tutorials			8	
	Reading / Self study			64	
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)	
	Assignments			25	
	Examina	tion	2-hour written exam	50	
	Presentation			25	
Required/recommended reading and online materials	E. Chaiss	on and S. McMillan: Astronomy Today	(Pearson, 2011)		
Course Website	http://www	v.physics.hku.hk/~nature/			

PHYS2055 Introduction to	relativity (6 credits)	Academic Year	2014	
Offering Department	Physics		Quota		
Course Co-ordinator	Dr K M Le	ee, Physics (kmlee@lily.physics.hku.hk)			
Teachers Involved	Dr K M Le	ee, Physics			
Course Objectives		se aims at introducing students the essence of special n all disciplines and all years with science background.		as an elective for	
Course Contents & Topics	time, Exa	Fopics include: "Common-sense" concepts of space and time versus Einstein's conceptions of space an ime, Examples of time dilation and space contraction, Paradoxes of relativity including the famous twi paradox and the "pole-in-the-barn", Four vectors and Lorentz invariant.			
Course Learning Outcomes	On succe	ssful completion of this course, students should be able	e to:		
	 State th Explain Describ 	 Recall the setup and significance of Michelson-Morley experiment. State the basic postulates and the spacetime concept of special relativity. Explain time dilation and length contraction. Describe Lorentz transformation and its applications. State the resolution of the twin and pole-in-the-barn paradoxes. 			
Pre-requisites (and Co-requisites and mpermissible combination)		Pass in PHYS1250 Fundamental physics or PHYS1150 Problem solving in physics or PHYS1050 Physic for engineering students			
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D		organizational and presentati s required for attaining some ng, but with limited analytica	onal skills. of the course learning and critical abilities	

Course Type	Lecture-based course		
Course Teaching & Learning Activities	Activities	Details	No. of Hours
a Learning Activities	Lectures		36
	Tutorials		12
	Reading / Self study		80
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		25
	Examination	2-hour written exam	50
	Test		25
Required/recommended reading and online materials	Lecture notes provided by Course Coordin Robert Resnick and David Halliday: Basic Pub., 1992, 2nd revised edition) Edwin F. Taylor and John A. Wheeler: Freeman, 1992, 2nd edition)	Concepts in Relativity and Early Q	, ,

PHYS2150 Methods in phy	⁄sics I (6 cr	edits)	Aca	ademic Year	2014
Offering Department	Physics		Qu	ota	
Course Co-ordinator	Dr F K Ch	ow, Physics (judychow@hku.hk)			
Teachers Involved	Dr F K Ch	ow, Physics			
Course Objectives		se provides students with experience in physics. It is complete in itself, or may			
Course Contents & Topics	particle dy dimension exponenti variable fu cylindrical	Solutions of ordinary differential equations in first, second and higher orders and their applications in particle dynamics, circuit theories and nuclear physics; Principles of vectors; Analytic geometry in three dimensions; Vector functions; Cartesian, cylindrical and spherical coordinates; Complex numbers, exponential functions and the mathematical representation of waves; Partial derivatives, extremes of mult variable functions and the Taylor series in two-variable functions; Double and triple integrals in Cartesian cylindrical and spherical coordinates; Change of variables and the Jacobians; Calculations of centers o mass, moments of inertia and electric potentials.			
Course Learning Outcomes	1. Review	ssful completion of this course, students the theory and principles of mather		mpare the fea	tures of various
	methods. 2. Describe the connections between mathematical equations and physical problems. 3. State and set up mathematical equations to describe the dynamics and evolution of physics systems. 4. Demonstrate knowledge of choosing correct solution of mathematical equations. 5. Interpret and judge the physical meaning of result after calculations.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS1150 Problem solving in physics or MATH1011 University mathematics I or MATH101 University mathematics II or MATH1851 Calculus and ordinary differential equations				
Offer in 2014 - 2015	Y 1st	Y 1st sem		amination	Dec
Offer in 2015 - 2016	Y		'		'
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.			
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course			
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading	/ Self study			80
Assessment Methods	Methods		Details	V	eighting in final

	Assignments		15
	Examination	2 hour written exam	50
	Test		35
Required/recommended reading and online materials	J. Hass, M. D. Weir, and G. B. T edition) M. R. Spiegel: Schaum's Outline 2009) K. F. Riley, M. P. Hobson, and	Coordinator anced Engineering Mathematics (McGraw-Hill, 19 homas: University Calculus: Early Transcendents of Advanced Mathematics for Engineers and 9 S. J. Bence: Mathematical Methods for Physic e University Press, 2006, 3rd edition)	als (Pearson, 2011, 2nd Scientists (McGraw-Hill,
Course Website	http://www.physics.hku.hk/~phys2	150/	

PHYS2155 Methods in ph	ysics II (6 c	redits)	Aca	ademic Year	2014	
Offering Department	Physics		Qu	ota		
Course Co-ordinator	Dr F C C	Ling, Physics <i>(ccling@hku.hk)</i>				
Teachers Involved	Dr F C C	Ling, Physics				
Course Objectives		This course provides students with experience in using mathematical tools and techniques to solve problems in physics. It is complete in itself, or may also be taken after Methods in Physics I.				
Course Contents & Topics	integrals, divergend classical matrices: diagonaliz	A review on coordinate systems in three dimensions; Gradient, divergence, curl and Laplacian; Line integrals, surface integrals and volume integrals; Conservative fields and potentials; Green's theorem, divergence theorem and the Stokes' theorem; Curvilinear coordinates; Applications of vector calculus in classical mechanics and electrodynamics; Vector spaces and matrix algebra; Properties of some special matrices: Hermitian matrices and unitary matrices, etc; Quadratic forms; Eigenvalue problems and diagonalization of matrices; Applications of matrix theory in physical problems; Numerical methods for finding roots of equations; Numerical differentiation and integration.				
Course Learning Outcomes	 Review methods. Descrit State a Demon Solve w Interpretation 	On successful completion of this course, students should be able to: 1. Review the theory and principles of mathematical methods and compare the features of various methods. 2. Describe the connections between mathematical equations and physical problems. 3. State and set up mathematical equations to describe the dynamics and evolution of physics systems. 4. Demonstrate knowledge of choosing correct solution of mathematical equations. 5. Solve various problems and operate the calculations with computer. 6. Interpret and judge the physical meaning of result after calculations.				
Pre-requisites (and Co-requisites and Impermissible combination)		PHYS1150 Problem solving in physi mathematics II or MATH1851 Calcul			I or MATH1013	
Offer in 2014 - 2015	Y 2nd	d sem	Exa	amination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	В	course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of				
	the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply					
	learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	·				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				80	
Assessment Methods	Methods		Details		eighting in fina ourse grade (%)	
	Assignm	ents			15	
Assessment Methods and Weighting	Assignm		2-hour written exam		15 50	

Required/recommended reading and online materials	Lecture notes provided by Course Coordinator Riley K.F., Hobson M.P. and Bence S.J.: Mathematical Methods for Physics and Engineering (Cambridge, 2006, 3rd edition) Wylie C.R., Barrett L.C.: Advanced Engineering Mathematics (McGraw Hill, 1995)
Course Website	http://www.physics.hku.hk/~phys1316/

PHYS2250 Introductory m		o creuns)		Academic Year	2014	
Offering Department	Physics			Quota		
Course Co-ordinator	Dr M K Y	ip, Physics (mankit@bohr.physic	s.hku.hk)			
Teachers Involved		ip (Sem 1), Physics to (Sem 2), Physics				
Course Objectives	who are who inter	This course covers the foundation of mechanics in one semester. It serves as a core course for students who are planning to take physics, astronomy, or mathematics/physics as major. It also serves students who intend to take physics as minor. Both conceptual ideas and mathematical treatment in mechanics are emphasized.				
Course Contents & Topics	Conserva Angular Harmonic	Topics include: Kinematics, Newton's Laws of Motion and Their Applications, Linear Momentum and it Conservation, Variable Mass Problems, System of Particles and Centre of Mass, Torque and Rotation Angular Momentum and its Conservation, Work, Energy and its Conservation, Gravitation, Simple Harmonic Motions, Fluid Static and Pressure, Archimedes' Principle and Buoyancy, Bernoulli's Equation Surface Tension and Capillary Tube.				
Course Learning Outcomes	On succe	essful completion of this course, s	tudents should be able to:			
	 Apply world. Analys 	Describe and explain the fundamental physical principles. Apply these principles, together with logical and mathematical reasoning, to situations of the physical world. Analyse and solve problems with the aids of mathematics. Acquire and interpret experimental data to examine the physical laws.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P	Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students				
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to app knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. App minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to dra appropriate conclusions.					
Course Type	Lecture w	vith laboratory component course				
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Laborato	ory			(
	Tutorials					
	Reading / Self study				80	
Assessment Methods and Weighting	Methods	S	Details		Weighting in fina course grade (%	
	Assignm	ents			10	
	Examina	ition	2-hour written exar	m	50	
	Examination					
	Laborato	ory reports			1	

reading and online materials	P.A Tipler and G. Mosca: Physics for Scientists and Engineers, (Freeman, 2008, 6th edition). D. Kleppner and Robert J. Kolenkow: An Introduction to Mechanics (McGraw Hill, 1978, International edition)
Course Website	http://www.physics.hku.hk/~phys2250/

PHYS2255 Introductory	electricity an	d magnetism (6 credits)	Acaden	nic Year	2014	
Offering Department	Physics		Quota			
Course Co-ordinator	Dr J C S P	un, Physics <i>(jcspun@hku.hk)</i>				
Teachers Involved	Dr J C S P	un, Physics				
Course Objectives	for student students v	This course covers the foundation of electricity and magnetism in one semester. It serves as a core course for students who are planning to take physics, astronomy, or mathematics/physics as major. It also serves students who intend to take physics as minor. Both conceptual ideas and mathematical treatment in electricity and magnetsim are emphasized.				
Course Contents & Topics	conductors	Topics include: Vector notation and vector field, Electric force and electric field, Gauss' law and electric conductors, Electric potential energy and potential, Capacitance and DC circuits, Magnetic force, Magnetic field, Faraday's law of induction, Inductance, AC circuit, Maxwell's equations and electromagnetic waves.				
Course Learning Outcomes	On succes	sful completion of this course, students	s should be able to:			
	 Apply the world. Analyse 	 Describe and explain the fundamental physical principles. Apply these principles, together with logical and mathematical reasoning, to situations of the physic world. Analyse and solve problems with the aids of mathematics. Acquire and interpret experimental data to examine the physical laws. 				
Pre-requisites and Co-requisites and mpermissible combination)	Pass in Ph	YS1250 Fundamental physics or PHY	S1050 Physics for engineerin	g students	3	
Offer in 2014 - 2015	Y 2nd	sem	Examin	ation	May	
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learnin outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.					
Course Type	Lecture wi	th laboratory component course				
Course Teaching	Activities	·	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Laborator	V				
	Tutorials	,				
		Self study			80	
Annount Motherle		rodding / Coll Study				
Assessment Methods and Weighting	Methods		Details		Weighting in fina course grade (%	
	Assignme				10	
	Examinati		2-hour written exam		50	
	Laborator	y reports			15	
	Test				25	
Required/recommended reading and online materials	R. D. Knig R. Resnick	r and G. Mosca: Physics for Scientists ht: Physics for Scientists and Engineer r, D. Halliday, and K. Krane: Physics V and J. W. Jewett: Physics for Scientist	s (Pearson, 2008, 2nd edition olume 2 (John Wiley and Son) s, 2002, 5	th edition)	

PHYS2260 Heat and waves	(o credits	5)	Ac	cademic Year	2014	
Offering Department	Physics		Qı	uota		
Course Co-ordinator	Dr F C C	Ling, Physics (ccling@hku.hk)				
Teachers Involved	Dr F C C	Ling, Physics				
Course Objectives	This course covers the foundation of heat and waves in one semester. It serves as a core course fo students who are planning to take physics, astronomy, or mathematics/physics as major. It also serves students who intend to take physics as minor. Both conceptual ideas and mathematical treatment in hea and waves are emphasized.					
Course Contents & Topics	Topics include: type of waves; Sinusoidal wave including transverse velocity and phase, Wave propagation through a stretched string as an example for transverse wave, Sound wave as an example for longitudinal wave, Wave equation, Energy in wave motion, The principle of superposition, Interference of waves, Standing waves and resonance, Beats, The Doppler Effect, Light wave as an electromagnetic wave, Reflection, Refraction, Double slit interference, Interference from thin films, Single slit diffraction, Multiple slit and grating, Polarization, Temperature and equilibrium, Ideal gas law, Molecular view of pressure, Mean free path, distributions of molecular speed and energy, Concept of heat, First law of thermodynamic, Work done on or by an ideal gas, Internal energy of an ideal gas, Molar heat capacities a constant volume and constant pressure, Different thermodynamic processes including adiabatic, isothermal, constant-volume, cyclical and free expansion, Reversibility of process, definition of entropy change, The second law of thermodynamic, Carnot engine, Statistical view of entropy.					
Course Learning Outcomes		ssful completion of this course, students s				
	 Apply tworld. Analyse 	pe and explain the fundamental physical perhese principles, together with logical and earnd solve problems with the aids of mate and interpret experimental data to exame	d mathematical reason thematics.	ing, to situation	s of the physica	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS1250 Fundamental physics or PHYS1050 Physics for engineering students					
Offer in 2014 - 2015	Y 1st	sem	Ex	amination	Dec	
Offer in 2015 - 2016	Υ		l		ı	
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.					
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activitie	s	Details		No. of Hours	
Learning Activities	Lectures	-			3	
	Laborato					
	Tutorials					
	Reading / Self study				80	
Assessment Methods and Weighting	Methods	,	Details		eighting in fina	
	Assignm	ents			1	
	Examina		2-hour written exam		5	
		ry reports	ou willon exam		1:	
	Test	тутороно			2:	
Required/recommended	P. A. Tiple	er and G. Mosca: Physics for Scientists ar k, D. Halliday, and K. Krane: Physics Vol k, D. Halliday, and K. Krane: Physics Vol			on)	

PHYS2265 Modern physic	s (6 credits	s)	Academic	Year 2014		
Offering Department	Physics		Quota			
Course Co-ordinator	Dr F K Ch	now, Physics (judychow@hku.hk)				
Teachers Involved	Dr F K Ch	now (Sem 1 and 2), Physics				
Course Objectives	students students	This course covers the foundation of modern physics in one semester. It serves as a core course for students who are planning to take physics, astronomy, or mathematics/physics as major. It also serves students who intend to take physics as minor. Both conceptual ideas and mathematical treatment in modern physics are emphasized.				
Course Contents & Topics		clude: Particle Properties of Wave, Wa to Time Independent Schrodinger E				
Course Learning Outcomes	On succe	ssful completion of this course, studen	ts should be able to:			
	2. Apply tworld.3. Analyse	 Describe and explain the fundamental physical principles. Apply these principles, together with logical and mathematical reasoning, to situations of the physical 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P	HYS1250 Fundamental physics or PH	YS1050 Physics for engineering s	students		
Offer in 2014 - 2015	Y 1st	sem 2nd sem	Examinat	ion Dec May	y	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence of comm outcomes. Lack of analytical and critical abil knowledge to solve problems. Organizatior minimally effective or ineffective lab skills appropriate conclusions.	lities, logical and coherent thinking. Show and presentational skills are minimally	very little or no ability to effective or ineffective.	apply Apply	
Course Type	Lecture w	rith laboratory component course				
Course Teaching	Activitie	s	Details	No. of H	lours	
& Learning Activities	Lectures				36	
	Laborato	rv			6	
	Tutorials	•			8	
	Reading	/ Self study			80	
Assessment Methods and Weighting	Methods	3	Details	Weighting in course grade		
	Assignm	ents			10	
	Examina	tion	2-hour written exam		50	
	Laborato	ry reports			15	
	Test				25	
Required/recommended eading and online materials	R. Harris: K. Krane: R. A. Sen P.A Tiple	otes provided by Course Coordinator Modern Physics (Addison-Wesley, 20 Modern Physics (John Wiley & Sons, 2 way, C. J. Moses and C. A. Moyer: Mor r and G. Mosca: Physics for Scientist	2012, 3rd edition) dern Physics (Brooks Cole, 2004		8, 6tł	
	edition).	,	3	, ,	•	

PHYS2850 Atomic and nucle	ear physics (6 credits)	Academic Year	2014	

Offering Department	Physics		Quota			
Course Co-ordinator	Dr S Z Zh	ang, Physics (shizhong@hku.hk)				
Teachers Involved	Dr S Z Zh	ang, Physics				
Course Objectives	physics. I Important	This course will introduce students to the fundamentals of atomic physics and rudimentary nuclear physics. It aims to provide a coherent and concise coverage of traditional atomic and nuclear physics important topics of current research interest will be also discussed, such as laser cooling and trapping which plays an important role in the realization of Bose-Einstein condensate in atomic vapors.				
Course Contents & Topics	electroma	clude: Atomic structure of hydroge ignetic field, spectroscopy, laser trap Applications of the basic principle te.	ping and cooling; nuclear structure,	shell model and nuclea		
Course Learning Outcomes	On succe	ssful completion of the course, stude	nts should be able to:			
	magnitude 2. Explain 3. Recogn	general considerations of quantum phe of estimation of physical effects. In how light interacting with atom; the value the general features of atomic/nuquantum physics to understand the ba	working principle of laser trapping an uclear spectroscopy.	nd cooling.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P	HYS2265 Modern physics				
Offer in 2014 - 2015	N	N Examination				
Offer in 2015 - 2016	N	N				
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly					
	effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	outcomes. Lack of analytical and critical a knowledge to solve problems. Organizati	mand of knowledge and skills required for bilities, logical and coherent thinking. Show on and presentational skills are minimally lls and techniques. Misuse of data and re	very little or no ability to apply effective or ineffective. Apply		
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	S	Details	No. of Hours		
& Learning Activities	Lectures		Dotallo	36		
	Tutorials			18		
		Reading / Self study		80		
Assessment Methods						
and Weighting	Methods	5	Details	Weighting in fina course grade (%		
	Assignments			20		
	Examination			50		
	Test			30		
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator W. Demtroder, Atoms, molecules and photons (Springer, 2nd, 2011) K. Krane, Introductory nuclear physics (John Wiley & Sons, 1988) B. H. Bransden and C. J. Joachain: Physics of Atoms and Molecules (Pearson, 2nd, 2003)					

PHYS3150 Theoretical physics (6 credits)		Academic Year	2014		
Offering Department	Physics	Quota			
Course Co-ordinator	Prof Z D Wang, Physics (zwang@hku.hk)				
Teachers Involved	Prof Z D Wang, Physics				
Course Objectives	The aim of this course is to provide students with the conceptual skills and key analytical tools for solving real problems in all major areas of physics.				

Course Contents & Topics	Cauchy's equation, special fur	This course will introduce and address the following topics: Application of complex variables including the Cauchy's integral formula and calculus of residues, Partial differential equations (the general wave equation, the Schrodinger equation, the Poisson equation, and the diffusion equation), Properties of special functions widely used in Physics (Gamma functions, Beta functions, Bessel functions, spherical harmonics etc.), Fourier Series, and Fourier Transform.				
Course Learning Outcomes	1. Analyse 2. Calcula 3. Analyse 4. Apply th	On successful completion of this course, students should be able to: 1. Analyse and examine the analytical properties of complex functions. 2. Calculate various definite integrals using the method of residues. 3. Analyse and solve the first and second order ordinary equations, and typical partial differential equations. 4. Apply the special functions in handling various physical problems. 5. Use the Fourier Series and Fourier transform in describing, respectively, any periodic function and wave				
Pre-requisites (and Co-requisites and Impermissible combination)		PHYS2250 Introductory mechanics or 5 Modern physics) and (PHYS2150 Meth				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ised course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	Self study			80	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents			20	
	Examinat	ion	3-hour written exan	n	70	
	Test				10	
Required/recommended reading and online materials		tes provided by Course Coordinator and H. Weber: Mathematical Methods fo	r Physicists (Acade	mic Press, 2005)		

PHYS3350 Classical mech	Academic Year	2014			
Offering Department	Physics	Quota			
Course Co-ordinator	Dr S Z Zhang, Physics (shizhong@hku.hk)				
Teachers Involved	Dr S Z Zhang, Physics				
Course Objectives	Build on the foundation course PHYS2250, this course discusses classical mechanics in the advanced undergraduate level with vigorous mathematical treatment. It serves as a core course for physics major students as well as an elective core for those who are interested to gain a deep understanding of classical mechanics and to apply related techniques in their own majors. This is also an essential course for those who plan to pursue postgraduate studies in physics or related disciplines. Both conceptual ideas and mathematical treatment are emphasized.				
Course Contents & Topics	Topics include: Kinematics; Application of Newton's laws (statics, dynamics); Conservation laws, Many particle System; Rotational motion and Angular Momentum. Specific topics will include (coupled) harmonic oscillators; central force problems, collisions and problems associated with constraint motions, chaos.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Apply Newton's laws to static as well as dynamic situations. 2. Apply conservation laws to mechanical problems and in particular, in a collisional situation. 3. Understand the general features of a many-particle system, and apply concepts such as center of mas force and toque equilibrium to simplify and analyze problems. 4. Understand the physical principles at work in experiments and explain experimental findings with				

	appropria	appropriate concepts and laws.				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in PHYS2250 Introductory mechanics				
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show thought, and ability to apply know	an advanced level of extensive kno strong analytical and critical abilities dedge to a wide range of complex, f intational skills. Apply highly effective and insightful conclusions.	and logical thinking, wi amiliar and unfamiliar s	th evidence of original ituations. Apply highly	
	В	the course learning outcomes. S apply knowledge to familiar and s	d of a broad range of knowledge ar how evidence of analytical and critic some unfamiliar situations. Apply effe niques. Correct use of data of results	cal abilities and logical tective organizational and	thinking, and ability to differentiational skills.	
	С					
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.					
	Fail	outcomes. Lack of analytical and knowledge to solve problems. O	e of command of knowledge and sk critical abilities, logical and coherent rganization and presentational skills lab skills and techniques. Misuse	thinking. Show very little are minimally effective	e or no ability to apply or ineffective. Apply	
Course Type	Lecture w	rith laboratory component cour	se			
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Laborato	ry			6	
	Tutorials				8	
	Assessment				80	
Assessment Methods and Weighting	Methods	3	Details		Weighting in final course grade (%)	
	Assignm	ents			10	
	Examination		2-hour written exa	m	60	
	Laboratory reports				10	
	Test				20	
Required/recommended reading and online materials	David Mo	otes provided by Course Coor rin: Introduction to Classical M er and Robert J. Kolenkow: A	lechanics, (Cambridge, 2007)			

PHYS3351 Quantum mech	nanics (6 credits)	Academic Year	2014			
Offering Department	Physics	Quota				
Course Co-ordinator	Dr W Yao, Physics (wangyao @hku.hk)					
Teachers Involved	Dr W Yao, Physics					
Course Objectives	Build on the foundation course PHYS2265, this course discusses quantum mechanics in the advanced undergraduate level with vigorous mathematical treatment. It serves as a core course for physics major students as well as an elective core for those who are interested to gain a deep understanding of quantum mechanics and to apply related techniques in their own majors. This is also an essential course for those who plan to pursue postgraduate studies in physics or related disciplines. Both conceptual ideas and mathematical treatment are emphasized.					
Course Contents & Topics	Time-dependent Schrodinger equation; statistical interpretation of wave function; probability density; probability current and continuity equation; momentum; physical observable and expectation value; Heisenberg uncertainty principle; time-independent Schrodinger equation; Hamiltonian and stationary states; particle in a square well; transmission and reflection at a barrier; harmonic oscillator problem using ladder operators; free particle and wavepacket; delta function potential; Dirac notations; state vectors; Hilbert space; Hermitian operators; eigenstates and eigenvalues; generalized statistical interpretation; generalized uncertainty principle; angular momentum; hydrogen atom; atomic orbits; spin; non-degenerate perturbation theory.					
Course Learning Outcomes	On successful completion of this course, students should be a 1. Describe the statistical interpretation of quantum mechanic and uncertainty of physical observables. 2. Formulate energy eigenvalue problems, and solve them analytical forms.	al systems, and calculate e	•			
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	known e 4. Judge correctio	 Formulate time evolution of the wavefunction and the expectation value of physical observables with known energy eigenfunctions. Judge the applicability of time-independent perturbation theory and formulate leading order energy corrections in certain perturbations applied to the physical system. Acquire and interpret experimental data to examine the physical laws. 				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in PHYS2265 Modern physics				
Offer in 2014 - 2015	Y 1s	Y 1st sem Examination Dec				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at course learning outcomes. Show thought, and ability to apply know effective organizational and prese and results to draw appropriate an	strong analytical and critical abiliti ledge to a wide range of complex ntational skills. Apply highly effecti	es and logical thinking, wi , familiar and unfamiliar s	th evidence of original ituations. Apply highly	
	В					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence outcomes. Lack of analytical and knowledge to solve problems. Or minimally effective or ineffective appropriate conclusions.	critical abilities, logical and cohere ganization and presentational ski	nt thinking. Show very little ills are minimally effective	e or no ability to apply or ineffective. Apply	
Course Type	Lecture	with laboratory component cours	se			
Course Teaching	Activiti	es	Details		No. of Hours	
& Learning Activities	Lecture	S			36	
	Laborat	ory			6	
	Tutorial	3			8	
	Reading	g / Self study			80	
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)	
	Assignn	nents			10	
	Examin	ation	3-hour written ex	am	60	
	Laborat	ory reports			10	
	Test				20	
Required/recommended reading		Lecture notes provided by Course Coordinator D. J. Griffiths: Introduction to Quantum Mechanics (Pearson Prentice Hall, 2004, 2nd ed.)				
and online materials						

PHYS3450 Electromagneti	Academic Year	2014			
Offering Department	Physics	Quota			
Course Co-ordinator	Prof X D Cui, Physics (xdcui@hku.hk)				
Teachers Involved	Prof X D Cui, Physics				
Course Objectives	Build on the foundation course PHYS2255, this course discusses electromagnetism in the advanced undergraduate level with vigorous mathematical treatment. It serves as a core course for physics major students as well as an elective core for those who are interested to gain a deep understanding of electromagnetism and to apply related techniques in their own majors. This is also an essential course for those who plan to pursue postgraduate studies in physics or related disciplines. Both conceptual ideas and mathematical treatment are emphasized.				
Course Contents & Topics	Topics include electric fields and potential, methods in electros magnetostatics and electromagnetic induction, magnetic properties of				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Identify the fundamental physics in electrostatics and magnetism. 2. Apply mathematical tools to describe electrostatics and magnetism. 3. Use the Maxwell's equations to explain various electrostatic and magnetic phenomena. 4. Differentiate between electrostatics in vacuum and in dielectric materials.				
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	6. Apply	5. Differentiate between magnetism in vacuum and in magnetic materials.6. Apply essential skills of making measurements with appropriate instruments in physics. experiment Interpret the experimental data and compare with the prediction of underlying physical principle.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in F	Pass in PHYS2255 Introductory electricity and magnetism				
Offer in 2014 - 2015	Y 2n	d sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes thought, and ability to app effective organizational an	stery at an advanced level of extensive land strong analytical and critical ability knowledge to a wide range of comple d presentational skills. Apply highly effectivate and insightful conclusions.	ies and logical thinking, wx, familiar and unfamiliar	ith evidence of original situations. Apply highly	
	В	the course learning outco apply knowledge to familia	command of a broad range of knowledge mes. Show evidence of analytical and c ar and some unfamiliar situations. Apply nd techniques. Correct use of data of resu	ritical abilities and logical effective organizational ar	thinking, and ability to nd presentational skills.	
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.					
	Fail	outcomes. Lack of analytic knowledge to solve problem.	evidence of command of knowledge and cal and critical abilities, logical and coher ems. Organization and presentational sl ffective lab skills and techniques. Misu	ent thinking. Show very litt	tle or no ability to apply e or ineffective. Apply	
Course Type	Lecture v	vith laboratory componer	nt course			
Course Teaching	Activitie	es	Details		No. of Hours	
& Learning Activities	Lectures	3			36	
	Laborate	ory			(
	Tutorials	3				
	Reading	Reading / Self study			80	
Assessment Methods and Weighting	Method	s	Details		Weighting in fina course grade (%	
	Assignm	nents			10	
	Examina	ation	3-hour written e.	xam	60	
	Laborate	ory reports			10	
	Test				20	
Required/recommended reading and online materials		notes provided by Course fiths: Introduction to Elec	e Coordinator trodynamics, 3rd ed., (Prentice-H	lall, 1999).		

PHYS3550 Statistical mecl	hanics & thermodynamics (6 credits)	Academic Year	2014		
Offering Department	Physics	Quota			
Course Co-ordinator	Prof S Fung, Physics (sfung@hku.hk)				
Teachers Involved	Prof S Fung, Physics				
Course Objectives	Build on the foundation course PHYS2260, this course discusses statistical mechanics and thermodynamics in the advanced undergraduate level with vigorous mathematical treatment. It serves as a core course for physics major students as well as an elective core for those who are interested to gain a deep understanding of statistical mechanics and thermodynamics and to apply related techniques in their own majors. This is also an essential course for those who plan to pursue postgraduate studies in physics or related disciplines. Both conceptual ideas and mathematical treatment are emphasized.				
Course Contents & Topics	Topics include: Elements of Ensemble Theory, Boltzmann, Fermi and Bose-Einstein statistics. Partition function and the laws of Thermodynamics. Disorder and entropy; concept of temperature; the free energy. Density of states. Classical gas, electrons in metals, and black body radiation. Heat capacities. Thermal properties of magnetic systems.				
Course Learning Outcomes					

Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS2260 Heat and waves					
Offer in 2014 - 2015	Y 2r	nd sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at ar course learning outcomes. Show str thought, and ability to apply knowlec effective organizational and presenta and results to draw appropriate and i	ong analytical and critical abilities a lge to a wide range of complex, far tional skills. Apply highly effective la	nd logical thinking, wi niliar and unfamiliar s	ith evidence of original situations. Apply highly	
	В	Demonstrate substantial command of the course learning outcomes. Show apply knowledge to familiar and som Apply effective lab skills and technique	v evidence of analytical and critical ne unfamiliar situations. Apply effect	abilities and logical tive organizational an	thinking, and ability to d presentational skills.	
	С	Demonstrate general but incomplete learning outcomes. Show evidence knowledge to most familiar situation moderately effective lab skills and te appropriate conclusions.	of some analytical and critical abilitions. Apply moderately effective organizations	ies and logical thinkir anizational and prese	ng, and ability to apply entational skills. Apply	
	D					
	Fail	Demonstrate little or no evidence of outcomes. Lack of analytical and critic knowledge to solve problems. Orgaminimally effective or ineffective lal appropriate conclusions.	ical abilities, logical and coherent th nization and presentational skills a	inking. Show very litt are minimally effective	le or no ability to apply e or ineffective. Apply	
Course Type	Lecture v	with laboratory component course				
Course Teaching	Activities Details		Details		No. of Hours	
& Learning Activities	Lecture	S			36	
	Laboratory				6	
	Tutorials				8	
	Reading / Self study				80	
Assessment Methods and Weighting	Method	ls	Details		Weighting in final course grade (%)	
	Assignn	nents			10	
	Examina	ation	2-hour written exam		60	
	Laboratory reports				10	
	Test	, ,			20	
Required/recommended reading and online materials	F. Mandl C. Kittel:	Lecture notes provided by Course Coordinator F. Mandl: Statistical Physics, 2nd edition (John Wiley, 1988). C. Kittel: Elementary Statistical Physics (Robert E. Krieger, 1988). F.W. Sears & G.L. Salinger: Thermodynamics, Kinetic Theory and Statistical Thermodynamics (Addison				

PHYS3551 Introductory so	lid state physics (6 credits)	Academic Year	2014				
Offering Department	Physics Quota						
Course Co-ordinator	Prof J Gao, Physics (jugao @hku.hk)						
Teachers Involved	Prof J Gao, Physics						
Course Objectives	To provides a broad introduction to modern theories of the behaviour and properties of the solid state of matter. It is designed as a self-contained course which at the same time will serve as a basis for more advanced courses and projects in solid state physics.						
Course Contents & Topics	Crystal structures and symmetry. The formation of crystals. The reciprocal lattice and X-ray diffraction in crystals. Lattice vibrations and thermal properties. Free-electron theory of metals. Energy bands; metals semiconductors, and insulators. If time permits, special topics such as superconductor will be briefly mentioned.						
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge for crystal structures and characterization. 2. Describe the behavior of solid matter and explain the underlying physical concepts. 3. Apply physical principles and mathematical equations to discuss the physical properties of materials. 4. Apply essential skills of making measurements with appropriate instruments in physics experiments. 5. Interpret the experimental data and compare with the prediction of underlying physical principle.						
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS2260 Heat and waves and PHYS2265 Modern phy	rsics					
Offer in 2014 - 2015	Y 1st sem	Examination	Dec				

Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	Α	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use and results to draw appropriate and insightful conclusions.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.				
Course Type	Lecture w	ith laboratory component course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Laborato	ry		6		
	Tutorials			8		
	Reading / Self study			80		
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)		
	Assignm	ents		15		
	Examina	tion	2-hour written exam	60		
	Laboratory reports			10		
	Test			15		
Required/recommended reading and online materials	C. Kittel: Introduction to Solid State Physics (John Wiley, 1986, 6th ed.)					

PHYS3650 Observational astronomy (6 credits)				Academic Year	2014	
Offering Department	Physics		(Quota		
Course Co-ordinator	Dr J J L Lin	Dr J J L Lim, Physics (jjlim@hku.hk)				
Teachers Involved	Dr J J L Lin	n, Physics				
Course Objectives	An introduction to tools of contemporary observation astronomy, with a focus on those used at optical wavelengths, as well as an introduction to observational aspects of stars and galaxies at optical wavelengths. An emphasis is placed on a hands-on approach for students to gain experience in doing astronomical observations and data reduction.					
Course Contents & Topics	on observa	Topics include: properties and configurations of optical telescopes; properties of light, atmospheric effection observations; properties of astronomical detectors (PMT, CCD); astronomical imaging and magnitude system; astronomical spectroscopy; observations of stars and galaxies including blackbody radiation, colomagnitude system, emission and absorption spectrum, and astronomical redshifts.				
Course Learning Outcomes	Describe optical wav Describe Explain I of stars, ga	sful completion of this course, students should be and explain the workings of astronomical tele elengths. the effects of the properties of light and Earth's now the methods of astronomical photometry an laxies, and the universe. a small optical telescope to conduct simple day a	escopes and atmosphere	e on astronomical copy are applied to	observations.	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PH physics)	YS1650 Nature of the universe and (PHYS2250	0 Introductor	ry mechanics or Pl	HYS2265 Moder	
Offer in 2014 - 2015	Y 1st s	em		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of excourse learning outcomes. Show strong analytical and crit				

			to a wide range of complex, familiar and nal skills. Apply highly effective lab skills a ghtful conclusions.			
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.				
	С					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective in infective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.				
Course Type	Lecture v	vith laboratory component course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Laboratory			4		
	Tutorials			8		
	Reading / Self study			80		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignm	nents		30		
	Examina	ation	2-hour written exam	50		
	Laborate	ory reports		10		
	Test			10		
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator Frederick R. Chromey: To Measure the Sky B. W. Carroll & D. A. Ostlie: An Introduction to Modern Astrophysics (Addison-Wesley Publishing Company, 2007, 2nd edition)					

PHYS3651 The physical ur	niverse (6 o	credits)			Academic Year	2014	
Offering Department	Physics				Quota		
Course Co-ordinator	Dr S C Y	Dr S C Y Ng, Physics (ncy@bohr.physics.hku.hk)					
Teachers Involved	Dr S C Y	Ng, Physics					
Course Objectives	To introdu	uce basic physic	al principles of astronom	y and build a found	ation in modern ast	rophysics.	
Course Contents & Topics			and celestial coordinat			telescopes, basi	
Course Learning Outcomes	1. Calcula 2. Describ 3. Derive	Calculate the transformation between different celestial coordinate systems. Describe the formation of spectral lines and basic structures of telescopes. Derive the orbits in two body problem from first principle. Recall the radiative transfer equation.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P physics)	Pass in PHYS1650 Nature of the universe and (PHYS2250 Introductory mechanics or PHYS2265 Mode physics)					
Offer in 2014 - 2015	Y 1st	t sem			Examination	Dec	
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.						
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and						

		presentational skills.					
	Fail	outcomes. Lack of analytical and of	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course lear outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to a knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	Lecture-based course					
Course Teaching	Activitie	es .	Details	No. of Hours			
& Learning Activities	Lectures			36			
	Tutorials			12			
	Reading / Self study			80			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments			10			
	Examination		2-hour written exam	60			
	Presentation			10			
	Test			20			
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator Bradley W. Carroll and Dale A. Ostlie, An Introduction to Modern Astrophysics (Pearson, 2007) George B. Rybicki and Alan P. Lightman, Radiative Processes in Astrophysics (Wiley-Interscience, 1985) Frank H. Shu, The Physical Universe: An Introduction to Astronomy, (University Science Books, 1982) A. C. Phillips, The Physics of Stars (John Wiley & Sons, 1999) Laurence G. Taff, Celestial Mechanics (John Wiley & Sons, 1985)						
Course Website	http://www	w.physics.hku.hk/~phys3651/					

PHYS3652 Principles of a	stronomy ((6 credits)		Academic Year	2014		
Offering Department	Physics		C	Quota			
Course Co-ordinator	Dr J J L L	Dr J J L Lim, Physics (jjlim@hku.hk)					
Teachers Involved	Dr J J L L	Lim, Physics					
Course Objectives		uce or review a number of basic physica omy to gain knowledge of the Universe.	al principles, and expla	ain how these prir	nciples are applied		
Course Contents & Topics		clude: special relativity, Doppler effect; es and interferometers; binary stars an					
Course Learning Outcomes	1. Descrii 2. Associ 3. Apply	On successful completion of this course, students should be able to: 1. Describe and explain the physical principles discussed. 2. Associate the correct physical principles with the observed properties of certain astronomical objects. 3. Apply their understanding of the physical principle discussed to explain or compute the observed properties of select astronomical objects.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in F physics)	Pass in PHYS1650 Nature of the universe and (PHYS2250 Introductory mechanics or PHYS2265 Mode physics)					
Offer in 2014 - 2015	Y 2n	d sem	E	Examination	May		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery of the knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities, clear logical thinking, evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar, and unfamiliar situations using highly effective organizational and presentation skills.					
	В	B Demonstrate substantial command of the knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, reasoned logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities, logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-b	pased course					
Course Teaching	Activitie	es	Details		No. of Hours		
& Learning Activities	Lectures	5			36		
	Tutorials	5			12		
		/ Self study			80		

		l	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments		35
	Examination	2-hour written exam	50
	Test		15
Required/recommended reading and online materials	Lecture notes provided by Course Coordina B. W. Carroll & D. A. Ostlie: An Publishing Company, 2007, 2nd edition)		nysics (Addison-Wesley

PHYS3750 Laser and spe	ctroscopy ((o creatis)		Academic Year	2014		
Offering Department	Physics			Quota			
Course Co-ordinator	Prof S J >	(u, Physics (sjxu@hku.hk)					
Teachers Involved	Prof S J >	rof S J Xu, Physics					
Course Objectives	The cours	The course aims at providing a broad introduction to major types of lasers and modern laser spectroscopy.					
Course Contents & Topics	spectrosc	on to lasers and modern laser copic techniques. Lasers as sports. Photoluminescence. Raman sp	ectroscopic light source				
Course Learning Outcomes	1. Restate 2. Describ 3. Demon 4. Identify 5. Employ samples.	On successful completion of this course, students should be able to: 1. Restate the properties of fundamental optical processes. 2. Describe fundamental operation principle of modern lasers. 3. Demonstrate solid knowledge of modern laser spectroscopic techniques. 4. Identify main components of modern optical spectroscopic instruments. 5. Employ laser photoluminescence setup to measure low-temperature photoluminescence spectra of solid samples. 6. Interpret the experimental data and compare with the prediction of underlying physical principle.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P	HYS3551 Introductory solid state p	hysics, or already enrolle	ed in this course.			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec		
Offer in 2015 - 2016	Y						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.					
	Fail						
Course Type	Lecture w	vith laboratory component course					
Course Teaching	Activitie	s	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Laborato				10		
	Tutorials	•					
	i i atorialo						
	Pandina	/ Self study			0.		
	Reading	/ Self study			80		
	Reading Methods		Details		Veighting in fina		
		5	Details		Veighting in fina course grade (%		
Assessment Methods and Weighting	Methods	ents	Details 2-hour written exal		80 Veighting in fina course grade (% 20		

reading and online materials

J. Garcia Sole, L. E. Bausa, and D. Jaque: An Introduction to the Optical Spectroscopy of Inorganic Solids (John Wiley & Sons, 2005)

DUIVOOZEA Diveries of many		/O			A ! - V	0044	
PHYS3751 Physics of nand		(6 credits)			Academic Year	2014	
Offering Department	Physics				Quota		
Course Co-ordinator	TBC, Phys	sics ()					
Teachers Involved	TBC, Phys	TBC, Physics					
Course Objectives	fundament	al concepts and p	let senior undergradu physical properties of na ires and zero-dimensio	anomaterials includ			
Course Contents & Topics	nanomater electron ga of quantu	Introduction to nanomaterials and quantum size effect. Dimensionalities and density of states of various nanomaterials. Optical and transport properties of quantum wells, superlattices and two-dimensional electron gas. Physical properties of carbon nanotubes and semiconductor nanowires. Physical properties of quantum dots and nanocrystals. Fundamental principles of scanning tunneling microscopy and advanced thin-film growth techniques such as molecular beam epitaxy and metalorganic chemical vapor deposition.					
Course Learning Outcomes	On succes	sful completion of	this course, students s	hould be able to:			
	 Identify dimension Recogn techniques Describe 	Recall basic concepts and knowledge of dimensionality, density of states, quantum size effect. Identify and compare optical and transport properties of quantum wells, superlattices and two dimensional electron gas. Recognise the fundamental principles of scanning tunneling microscopy and advanced thin-film growth techniques such as molecular beam epitaxy and metalorganic chemical vapor deposition. Describe the basic physics of carbon nanotubes and semiconductor nanowires. Explain physical properties of zero-dimensional quantum dots and nanocrystals.					
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in PHYS3351 Quantum mechanics, and Pass in PHYS3551 Introductory solid state physics, or already enrolled in this course.					
Offer in 2014 - 2015	N				Examination		
Offer in 2015 - 2016	N						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of the knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, reasoned logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations using effective organizational and presentation skills.						
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective observation skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D						
	Fail	·					
Course Type	Lecture-ba	sed course					
Course Teaching & Learning Activities	Activities	S	Details			No. of Hours	
Assessment Methods and Weighting	Methods		Details			ighting in final urse grade (%)	
Required/recommended reading and online materials	TBC						

PHYS3850 Waves and opt	Academic Year	2014				
Offering Department	Physics Quota					
Course Co-ordinator	Dr J K C Leung, Physics (jkcleung@hku.hk)					
Teachers Involved	Dr J K C Leung, Physics	Dr J K C Leung, Physics				
Course Objectives	To give a coherent introduction to the development of modern phys the wave properties of light and optic application.	To give a coherent introduction to the development of modern physical optics, with particular attention to the wave properties of light and optic application.				
Course Contents & Topics	Mathematical theory of wave motion and the electromagnetic theory of light; the propagation of light and the laws of reflection and refraction; superposition and Fourier analysis of waves; theories, experimental observation and applications of polarization, interference and diffraction, thick lenses.					
Course Learning Outcomes	On successful completion of this course, students should be able to:					

	interferer 2. Apply devices.	 Explain and calculate the properties of waves including propagation, reflection, refraction, polarization interference and diffraction by using the theory of waves. Apply the theory of optics to calculate the geometrical parameters of thick lenses and design optic devices. Apply essential theories to design anti-reflection and reflection-enhancement films. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in F	PHYS2255 Introductory electrici	ty and magnetism and PH\	/S2260 Heat and w	aves		
Offer in 2014 - 2015	Y 2n	d sem		Examination	May		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	В	Demonstrate substantial comman outcomes. Show evidence of anal to familiar and some unfamiliar sit skills and techniques. Correct use	rtical and critical abilities, reasone uations. Apply effective organizati	ed logical thinking, and al onal and presentational	bility to apply knowledge		
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective observation skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.					
	Fail	Demonstrate little or no evidence outcomes. Lack of analytical and knowledge to solve problems. Or minimally effective or ineffective appropriate conclusions.	critical abilities, logical and cohere ganization and presentational sk	ent thinking. Show very li ills are minimally effecti	ttle or no ability to apply ve or ineffective. Apply		
Course Type	Lecture v	vith laboratory component cour	se				
Course Teaching	Activitie		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Laborate	Laboratory			6		
		Tutorials			8		
	Reading	Reading / Self study			80		
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)		
	Assignm	nents			10		
	Examina	ation	2-hour written ex	kam	60		
	Laborate	ory reports			10		
	Test				20		
Required/recommended reading and online materials	Eugene I	notes provided by Course Coord Hecht: Optics, (Addison-Wesley her: Modern Optics, (John Wile	, 2001, 4th ed.).	<u>'</u>			

PHYS3851 Atomic and nuc	clear physics (6 credits)	Academic Year	2014		
Offering Department	Physics	Quota			
Course Co-ordinator	Dr S Z Zhang, Physics (shizhong@hku.hk)				
Teachers Involved	Dr S Z Zhang, Physics				
Course Objectives	This course will introduce students to the fundamentals of atomic physics. It aims to provide a coherent and concise coverage of tra Emphasis will be put on practical application of quantum mechanics atomic and nuclear physics. If time permits, other topics of current in laser cooling and trapping.	ditional atomic and as well as concept	nuclear physics. ual framework of		
Course Contents & Topics	Topics include: Atomic structure of hydrogen and hydrogen-like atom, multi-electron atom, atom in electromagnetic field, spectroscopy; nuclear structure, shell model and nuclear reactions. Applications of the basic principles of atomic and nuclear physics will be mentioned when appropriate.				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Apply general considerations of quantum mechanics to atomic orders of magnitude of estimation of physical effects. 2. Explain how light interacting with atom. 3. Recognize the general features of multi-electron atomic system. 4. Apply quantum mechanics to understand the basic features of simple statements.	ŕ			

Pre-requisites (and Co-requisites and Impermissible combination)	Pass in F	Pass in PHYS3351 Quantum mechanics						
Offer in 2014 - 2015	Y 2n	d sem	Ex	kamination	May			
Offer in 2015 - 2016	Y				'			
Course Grade	A+ to F							
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.						
	В	Demonstrate substantial command of the course learning outcomes. Show apply knowledge to familiar and some Apply effective lab skills and technique	evidence of analytical and critical abundaniliar situations. Apply effective	oilities and logical to organizational and	thinking, and ability to differentiation of the presentational skills.			
	С	Demonstrate general but incomplete learning outcomes. Show evidence of knowledge to most familiar situations moderately effective lab skills and tec appropriate conclusions.	some analytical and critical abilities a. Apply moderately effective organization	and logical thinkin zational and prese	ig, and ability to apply intational skills. Apply			
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.						
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. Apply minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to draw appropriate conclusions.						
Course Type	Lecture-b	pased course						
Course Teaching	Activitie	es	Details		No. of Hours			
& Learning Activities	Lectures				36			
	Tutorials				12			
	Reading	Reading / Self study			80			
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)			
	Assignm	ents			20			
	Examination		2-hour written exam		60			
	Test			20				
	1630			Lecture notes from the Course Coordinator W. Demtroder: Atoms, molecules and photons (Springer, 2011, 2nd ed.) K. Krane: Introductory nuclear physics (John Wiley & Sons, 1988)				
Required/recommended reading and online materials	Lecture n	roder: Atoms, molecules and photo		<u>'</u>				

PHYS3999 Directed studio	es in physics (6 credits)	Academic Year	2014			
Offering Department	Physics	Quota				
Course Co-ordinator	Dr J K C Leung, Physics (jkcleung@hku.hk)	·				
Teachers Involved	Various teachers in the department, Physics					
Course Objectives	This capstone course is offered to students majoring in physics, math/physics or astronomy. It should be taken normally in their final year of study. It provides students with the opportunity to study a small problem by themselves, either theoretical, experimental or numerical, under the supervision of at academic staff using the subject materials the student has learn in all years of his/her major study. The available projects range from small scale research, critical literature review and comment, and to development of university-level physics or astronomy teaching tools.					
Course Contents & Topics	Students interested in taking this course should contact their prospective supervisors in May to determit the contents and the nature of their projects in the coming academic year. They must get the approximation both the prospective supervisor and the course coordinator to take this course. Students will receive training in research literature reading and reviewing, under the supervision of a st member. For theoretical project, students may need to fill in mathematical gaps of some sophisticat derivations and the critically analyze the research methods used in the field. For numerical project students need to use computers to reproduce existing numerical or simulation results. For experimen projects, students have to understand the design of the experiment, carrying it out and analyze the sources of errors.					
Course Learning Outcomes	On successful completion of this course, students should be able 1. Review the knowledge of a physics or astronomy problem in and research journals based on what they have learnt in their may 2. Criticize existing approaches for solving the selected physics of 3. Describe and explain connections between the physical princi 4. (For theoretical or computational projects) identify the key independently either by analytical or numerical means, and computational projects.	depth through literature ligors. For astronomy problem. Dies and the study probles issues of the problen	em. and solve ther			

		solutions. 5. (For experimental projects) propose and execute physics experiments or astronomical observation analyze results and sources of errors of the experiment or observation in comparison with predictions.					
Pre-requisites (and Co-requisites and Impermissible combination)	Physics M	Pass in at least 24 credits of advanced level (3XXX level or above) compulsory/core courses of the Physics Major, Mathematics/Physics Major or Astronomy Major curriculum. This capstone course is for Astronomy, Mathematics/Physics, and Physics Majors students only.					
Offer in 2014 - 2015	Y 2nd	d sem	Examination	No Exam			
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough grasp of the subject. Show evidence of strong logical and independent thinking. Insightful use and critical analysis/evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.					
	В	Demonstrate substantial grasp of the subject relevant information from sources, showing interpretations and to quote/reference aptly. effective organizational and presentational sk	ability to make meaningful comparisons be Correct use of data of results to draw appr	tween different secondary			
	С	C Demonstrate general but incomplete grasp of the subject. Show some evidence of logical and independent thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.					
	D	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Show limited evidence of logical and independent thinking. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate evidence of little or no grasp of evidence of logical and independent thinking. Misuse of data and results and/or unable to diminimally effective or ineffective.	. Limited use of secondary sources and no o	critical comparison of them.			
Course Type	Project-ba	ased course					
Course Teaching	Activitie	S	Details	No. of Hours			
& Learning Activities	Meeting	with supervisor		36			
	Reading	/ Self study		84			
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)			
	Oral pres	sentation	including supervisor's comments (10%)	30			
	Research	Research report		70			
Required/recommended reading and online materials	To be pro	vided by individual project supervisor					

Offering Department Course Co-ordinator	Physics					
Cauras Ca ardinatar	i nysics	Quota				
Course Co-ordinator	Prof J Wang, Physics (jianwang@hku.hk)	<u>'</u>	<u> </u>			
Teachers Involved	Prof J Wang, Physics					
Course Objectives	The aim of the course is show how the power of computers enables to computational approach to solving physics problems to be adopted, which is distinct from, and complimentary to, traditional experimental and theoretical approaches. The material covered will be found useful in any project or problem solving work that contains a strong computational or data analysis element. The course is designed such that a significant fraction of the student's time is spent actually programming specific physical problems rather than learning abstract techniques.					
Course Contents & Topics	The course will cover the following problems: Introductory computational physics and computer algebra integration and differentiation, interpolation and extrapolation, ordinary differential equation such as those of classical mechanics, partial differential equations (such as the Maxwell's equation, the diffusion equation, and the Schrodinger equation), matrix methods (such as systems of equations and eigenvalue problems applied to Poisson's equation and electronic structure calculations), Monte Carlo (Metropolis algorithm) and other simulation methods (such as molecular dynamics), and several physics projects.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Demonstrate knowledge in essential methods and techniques for no constraints. 2. Apply Monte Carlo method and other simulation methods to solve physical problems. 3. Employ appropriate numerical method to interpolate and extra experiments. 4. Use appropriate numerical method to solve the differential equation systems.	deterministic as we	ell as probabilistic			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in (PHYS3150 Theoretical physics or MATH3301 Algebra I or Functions of a complex variable or MATH3405 Differential equatic following courses: PHYS3350 Classical mechanics, PHYS3551 Electromagnetism, PHYS3550 Statistical mechanics and thermodynal	ons); and Pass in a Quantum mechan	any three of the			

Offer in 2014 - 2015	Y 1s	t sem		Examination	Dec	
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.				
	В	Demonstrate substantial command of a the course learning outcomes. Show e apply knowledge to familiar and some Apply effective lab skills and techniques	evidence of analytical and critic unfamiliar situations. Apply effort	cal abilities and logical tective organizational and	hinking, and ability to dipresentational skills.	
	С	Demonstrate general but incomplete of learning outcomes. Show evidence of knowledge to most familiar situations. moderately effective lab skills and tech appropriate conclusions.	some analytical and critical ab Apply moderately effective o	ilities and logical thinkin rganizational and prese	g, and ability to apply ntational skills. Apply	
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Apply partially effective lab skills and techniques. Limited ability to use data and results to draw appropriate conclusions.				
	Fail	Demonstrate little or no evidence of c outcomes. Lack of analytical and critica knowledge to solve problems. Organizminimally effective or ineffective lab appropriate conclusions.	al abilities, logical and coherent cation and presentational skills	thinking. Show very little are minimally effective	e or no ability to apply or ineffective. Apply	
Course Type	Lecture	with laboratory component course				
Course Teaching	Activiti	es	Details		No. of Hours	
& Learning Activities	Lecture	3			36	
	Laborat	ory			12	
	Tutorial	S			8	
	Reading	g / Self study			80	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignn	nents			20	
	Examination				40	
	Presentation				15	
	Project report				25	
Required/recommended reading and online materials	Samuel	notes provided by Course Coordina S.M. Wong: Computational Methods dano and N. Nakanishi: Computatio	s in Physics and Enginee		c)	

PHYS4151 Data analysis an	d modeling in physics (6 credits)	Academic Year	2014			
Offering Department	Physics	Quota				
Course Co-ordinator	Prof H F Chau, Physics (hfchau@hku.hk)					
Teachers Involved	Prof H F Chau, Physics					
Course Objectives	This course covers general modeling and data analysis techniques used in physics and related subjects with special emphasis on their uses in complex systems, nonlinear systems and adaptive systems. The focus is on the basic principles and concepts rather than the use of computer packages. This course provides a solid foundation for students who intended to do computational physics and complex systems research. It also prepares students to work in related industries.					
Course Contents & Topics	Topics include basic data analysis techniques, linear and non-linear fittings, determining the goodness of the fit, basic hypothesis testing techniques, modeling physical and related systems via differential (ordinary and/or partial), difference equations as well as discrete models such as cellular automata, introduction to complex systems, complex adaptive systems and nonlinear dynamics, the use of computer package such as Matlab in modeling and data analysis. The emphasis is on the basic principles and concepts rather than a particular software package or physical model. Depending on the mutual interests of the coordinators and the students, illustrative examples will be drawn from conventional fields such as classical mechanics, electromagnetism and quantum mechanics as well as more recent fields like biophysics, econophysics and sociophysics.					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe and explain state-of-the-art modeling methods used in phy 2. Apply basic modeling techniques, together with logical and mathen physical world. 3. Analyse and solve problems with the aid of computer packages suc 4. Critically interpret experimental data from physics experiments.	natical reasoning, to	situations of the			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in (PHYS3150 Theoretical Physics or MATH3301 Algebra I or MATH3401 Analysis I or MATH3403 Functions of a Complex Variable or MATH3405 Differential equations); and Pass in any one of the following courses: PHYS3350 Classical Mechanics, PHYS3351 Quantum Mechanics, PHYS3450 Electromagnetism, PHYS3550 Statistical Mechanics & Thermodynamics					

Offer in 2014 - 2015	Y 2n	d sem		Examination	May		
Offer in 2015 - 2016	Y	Υ					
Course Grade	A+ to F	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective computer modeling skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.					
	В	Demonstrate substantial command of toutcomes. Show evidence of analytical to familiar and some unfamiliar situaticomputer modeling skills and techniques	and critical abilities, reasoned I ons using effective organization	ogical thinking, and abi	ility to apply knowledge skills. Apply effective		
	С	Demonstrate general but incomplete or learning outcomes. Show evidence of sknowledge to most familiar situations. moderately effective computer modeling results to draw appropriate conclusions.	some analytical and critical abi Apply moderately effective or a skills and techniques. Mostly	lities and logical thinking ganizational and presented	ng, and ability to apply entational skills. Apply		
	D						
	Fail	Demonstrate little or no evidence of coutcomes. Lack of analytical and critica knowledge to solve problems. Organiz minimally effective or ineffective comput to draw appropriate conclusions.	l abilities, logical and coherent ation and presentational skills	thinking. Show very litt are minimally effectiv	le or no ability to apply e or ineffective. Apply		
Course Type	Lecture v	vith laboratory component course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Laboratory				12		
	Tutorials	;			8		
	Reading	/ Self study			80		
Assessment Methods and Weighting	Method	s	Details		Weighting in final course grade (%)		
	Assignm	nents			10		
	Examination				50		
	Presentation				20		
	Project report				20		
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator J. R. Taylor: An Introduction to Error Analysis (Univ. Sci. Books, 2rd ed., 1996) B. Hahn and D. Valentine: Essential Matlab for Engineers and Scientists (Academic Press, 5th ed., 2013) L. Lam: Nonlinear Physics for Beginners (World Sci., 1998) N. Boccara: Modeling Complex Systems (Springer, 2nd ed., 2012) AL. Barabasi and H. E. Stanley: Fractal Concepts in Surface Growth (CUP, 1995)						

PHYS4350 Advanced class	sical mechanics (6 credits)	Academic Year	2014				
Offering Department	Physics	Physics Quota					
Course Co-ordinator	Prof S Q Shen, Physics (sshen@hku.hk)						
Teachers Involved	Prof S Q Shen, Physics						
Course Objectives	Build on the advanced undergraduate level course PHYS3350, this mathematical techniques in classical mechanics through special to elective course to better prepare students for their postgraduate disciplines.	pics and applications	s. It serves as an				
Course Contents & Topics	Topics include: Hamiltonian principles, Lagrangian formulation of dynamics, nonlinear problems, many body systems, variational principle, generalized coordinates, simple application of Lagrangian equation.						
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Explain the difference between Newtonian mechanics and analytic 2. Solve the mechanical problems using Lagrangian formalism. 3. Discuss the connection between classical mechanics and question formalism. 4. Apply the variational principle to real physical situations.	cal mechanics.	from Hamiltonian				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS3350 Classical mechanics						
Offer in 2014 - 2015	Y 2nd sem	Examination	May				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						

Grade Descriptors	A	course learning outcomes. Show strong	vanced level of extensive knowledge and analytical and critical abilities and logical to a wide range of complex, familiar and al skills.	thinking, with evidence of original		
	В	outcomes. Show evidence of analytical	e knowledge and skills required for attai and critical abilities and logical thinking, pply effective organizational and presenta	and ability to apply knowledge to		
	С	learning outcomes. Show evidence of so	mmand of knowledge and skills required ome analytical and critical abilities and log ply moderately effective organizational and	gical thinking, and ability to apply		
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critical	mmand of knowledge and skills required abilities, logical and coherent thinking. Sh on and presentational skills are minimally o	ow very little or no ability to apply		
Course Type	Lecture-l	pased course				
Course Teaching & Learning Activities	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures	3		36		
	Tutorials	5		12		
	Reading	g / Self study		80		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignments			20		
	Examination		3-hour written exam	60		
	Test			20		
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator H. Goldstein, C. Poole, and J. Safko, Classical Mechanics, (Pearson Education Inc, 2004)			Inc, 2004)		

PHYS4351 Advanced quar	ntum mech	nanics (6 credits)	Academic Year	2014			
Offering Department	Physics		Quota				
Course Co-ordinator	Dr W Yac	o, Physics (wangyao@hku.hk)					
Teachers Involved	Dr W Yac	o, Physics					
Course Objectives	mathema	Build on the advanced undergraduate level course PHYS3351, this course further discusses concepts and mathematical techniques in quantum mechanics through special topics and applications. It serves as ar elective course to better prepare students for their postgraduate studies in physics or other related disciplines					
Course Contents & Topics	non-dege	particles. Pauli exclusion principle. Fermion and bosons. nerate and degenerate perturbation theory. Time dep tion, partial waves and Born approximation. Variational r	endent perturbation t				
Course Learning Outcomes	1. Review 2. Apply p 3. Demor	On successful completion of this course, students should be able to: 1. Review the perturbation theory and some other approximation methods on various quantum systems. 2. Apply physics principles to describe the physical properties of various quantum systems. 3. Demonstrate knowledge and discuss the underlying physical concepts associated with the selected quantum systems.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in P	Pass in PHYS3351 Quantum mechanics					
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May			
Offer in 2015 - 2016	Υ		·				
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.						
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.						

Course Type	Lecture-based course				
ourse Teaching Learning Activities	Activities	Details	No. of Hours		
& Learning Activities	Lectures		36		
	Tutorials		12		
	Reading / Self study		80		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)		
	Assignments		20		
	Examination	3-hour written exam	60		
	Test		20		
Required/recommended reading and online materials	Lecture notes provided by Course Co D. J. Griffiths: Introduction to Quantum	ordinator n Mechanics (Pearson Prentice Hall, 2004	I, 2nd edition).		
Course Website	http://www.physics.hku.hk/~phys4351	/			

PHYS4450 Advanced elect	tromagnet	ism (6 credits)	Aca	demic Year	2014	
Offering Department	Physics		Quo	ota		
Course Co-ordinator	Prof X D	Cui, Physics (xdcui@hku.hk)				
Teachers Involved	Prof X D	Cui, Physics				
Course Objectives	mathema	the advanced undergraduate level c ttical techniques in electromagnetis course to better prepare students is.	m through special topics an	d applications	. It serves as an	
Course Contents & Topics		clude Maxwell's Equations, Poyntin vave guides, retarded potentials,				
Course Learning Outcomes	1. Review 2. Apply I 3. Evalua	essful completion of this course, study of and discuss the fundamental physion Maxwell's equations to analyze complete how special relativity is incorpora late and solve problems in electrom	ics in classical electrodynamic plicated electrostatic and mag ted in the study of electromag	netic phenom netism		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in F	PHYS3450 Electromagnetism				
Offer in 2014 - 2015	Y 1s	t sem	Exa	mination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizati	abilities, logical and coherent thinking	ng. Show very little	or no ability to apply	
Course Type	Lecture-b	pased course				
Course Teaching	Activitie	es e	Details		No. of Hours	
& Learning Activities	Lectures	}			36	
	Tutorials	3			12	
	Reading / Self study				80	
Assessment Methods and Weighting	Method	s	Details	\ \	Veighting in final course grade (%)	
	Assignm	nents			10	
	Examination		3-hour written exam		60	

	Test		30
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator D. J. Griffiths: Introduction to Electrodynamics, 3rd	d ed., (Prentice-Hall, 1999).	

PHYS4550 Advanced statis		iamoo (o oroano)		Academic Year	2014
Offering Department	Physics			Quota	
Course Co-ordinator	Dr Y Tu, P	hysics (yanjuntu@hku.hk)			
Teachers Involved	Dr Y Tu, P	hysics			
Course Objectives	Build on the advanced undergraduate level course PHYS3550, this course further discusses concepts and mathematical techniques in statistical mechanics through special topics and applications. It serves as at elective course to better prepare students for their postgraduate studies in physics or other related disciplines.				
Course Contents & Topics	Topics include: Statistical ensembles for isolated and open systems. Equilibrium fluctuations. Order an disorder phase transition. Mean field and Landau theory. Classical ideal gas, quantum ideal gas. Quantum fluid.				
Course Learning Outcomes	On succes	sful completion of this course, students s	should be able to:		
	Apply th world.	e and explain the fundamental physical pases principles, together with logical and sand solve problems with the aids of ma	d mathematical re	asoning, to situation	ns of the physical
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Ph	IYS3550 Statistical mechanics & thermo	odynamics		
Offer in 2014 - 2015	Y 1st s	sem		Examination	Dec
Offer in 2015 - 2016	Υ				'
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	sed course			
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
		Self study			80
Assessment Methods		,			
and Weighting	Methods		Details		Veighting in fina course grade (%
	Assignme	nts			20
	Examinati	on :	3-hour written exa	m	60
	Test				20
.					
Required/recommended reading and online materials	F. Mandl: S C. Kittel: E	tes provided by Course Coordinator Statistical Physics, 2nd edition (John Wilk lementary Statistical Physics (Robert E. s & G.L. Salinger: Thermodynamics, Kil 986)	Krieger, 1988)	Statistical Thermod	ynamics (Addisor

PHYS4650 Stellar phys		Academic Year	2014		
Offering Department	Physics	Quota			
Course Co-ordinator	Dr S C Y Ng, Physics (ncy@bohr.physics.hku.hk)	Dr S C Y Ng, Physics (ncy@bohr.physics.hku.hk)			
Teachers Involved	Dr S C Y Ng, Physics	Dr S C Y Ng, Physics			

Course Objectives	To introduce the basic theory of stellar structure and evolution. It follows a vigorous mathematical treatment that stresses on the underlying physical processes. Knowledge in quantum mechanics and statistical mechanics will be advantageous.				
Course Contents & Topics	Topics include: Definition of stars. The H-R diagram. Stellar structure equations. Polytropic model. Elementary stellar radiation processes. Simple stellar nuclear processes. Saha equation. Stability of stars. Zero-age main sequence stars and their evolution. The solar neutrino problem. Late stage evolution of stars. Supernova explosion. If time permits, special topics selected from below will be briefly mentioned: star formation, brown dwarfs and planets, AGB stars and planetary nebulae, binary stars and their evolution, Cepheid variables and theory of stellar pulsation, and introduction to helioseismology.				
Course Learning Outcomes	1. Describ 2. Analytic of stellar s 3. Critical evolution of	esful completion of this course, studing what is stars and to classify differ cally calculate and solve problems restructure equations and Saha equations and saha equations are considered by examine the physical processe of stars. selected research papers in the field.	ent types of stars. elated to the structure an ions. es occurring in stars an		Ü
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in Pl	HYS3651 The physical universe and	d PHYS3351 Quantum m	echanics	
Offer in 2014 - 2015	Y 2nd	Isem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.			
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of coluctomes. Lack of analytical and critical knowledge to solve problems. Organization	abilities, logical and coherent t	hinking. Show very litt	le or no ability to apply
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	S	Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading	/ Self study			80
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Assignme	ents			10
	Examinat	tion	2-hour written exan	ı	60
	Project re	eports			10
	Test				20
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator Prialnik, D.: An introduction to the theory of stellar structure and evolution, 2nd ed. (CUP, 2010) A. C. Phillips, The Physics of Stars (John Wiley & Sons, 1999) Bowers, R. & Deeming, T.: Astrophysics I. Stars (Jones and Bartlett, 1984) Padmanabhan, T.: Theoretical astrophysics Volume 1 (CUP, 2000)				
Course Website		v.physics.hku.hk/~phys4650/	,		

PHYS4651 Selected topics in astrophysics (6 credits)				
Physics				
Prof K S Cheng, Physics (hrspksc@hku.hk)				
Prof K S Cheng, Physics				
To introduce students some current topics in astrophysics. It may be as background to research work in astrophysics.	taken as a self-conf	ained course o		
relativity. Physics of shock wave. Properties of Cosmic rays. Physics	of compact stellar of	bjects including		
	Physics Prof K S Cheng, Physics (hrspksc@hku.hk) Prof K S Cheng, Physics To introduce students some current topics in astrophysics. It may be as background to research work in astrophysics. Topics include: Brief review of thermodynamical equilibrium, ra relativity. Physics of shock wave. Properties of Cosmic rays. Physics black holes, white dwarfs, neutron stars and quark stars. Elements of	Physics Prof K S Cheng, Physics (hrspksc@hku.hk) Prof K S Cheng, Physics To introduce students some current topics in astrophysics. It may be taken as a self-cont as background to research work in astrophysics. Topics include: Brief review of thermodynamical equilibrium, radiation mechanisms relativity. Physics of shock wave. Properties of Cosmic rays. Physics of compact stellar or black holes, white dwarfs, neutron stars and quark stars. Elements of cosmology: classical		

Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Apply physics principles to describe the physical properties of various astrophysical systems. 2. Explain the observed phenomena of some selected astrophysical objects. 3. Demonstrate knowledge and discuss the underlying physical concepts associated with the astrophysical systems and their dynamic interactive processes .					
Pre-requisites (and Co-requisites and Impermissible combination)		PHYS3351 Quantum mechanics or s & thermodynamics or PHYS3651 Th		n or PHYS3550 Statistical		
Offer in 2014 - 2015	N	N Examination				
Offer in 2015 - 2016	Υ		'	<u>'</u>		
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advar course learning outcomes. Show strong and thought, and ability to apply knowledge to a effective organizational and presentational s	alytical and critical abilities and logical a wide range of complex, familiar and	thinking, with evidence of original		
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to appl knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			8		
	Reading	/ Self study		80		
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)		
	Assignm	ents		10		
	Examina	tion	2-hour written exam	50		
	Presenta	ition		15		
	Test			25		
Required/recommended reading and online materials	S. L. Shap B. W. Publishing	otes provided by Course Coordinator piro and S. A. Teukolsky: Black Holes, Carroll & D. A. Ostlie: An Inti g Company, 2007, 2nd edition) leng: Relativity, Gravitation and Cosm	roduction to Modern Astrop	physics (Addison-Wesley		

PHYS4652 Planetary scien	ce (6 credits)	Academic Year	2014			
Offering Department	Physics	Quota				
Course Co-ordinator	Dr M H Lee, Physics (mhlee @hku.hk)					
Teachers Involved	Dr M H Lee, Physics					
Course Objectives	This course provides students with a modern advanced-level ur System and planetary systems around other stars and of the phythat govern them.					
Course Contents & Topics	Terrestrial planets, giant planets, moons and minor bodies in energy transport; planetary atmospheres, surfaces, and interiors					
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe key aspects of our Solar System and extrasolar planetary systems acquired through observations and experiments. 2. Explain essential elements of the processes governing the properties of planetary bodies. 3. Apply physical principles to construct models for some basic aspects of the structure, formation and evolution of planetary bodies.					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in PHYS3651 The physical universe or (PHYS3350 Classical mechanics and PHYS3550 Statistical mechanics & thermodynamics)					
Offer in 2014 - 2015	N	N Examination				
Offer in 2015 - 2016	Υ					

Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В					
	С	learning outcomes. Show evidence of	command of knowledge and skills require of some analytical and critical abilities and Apply moderately effective organizational a	logical thinking, and ability to apply		
	D					
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-l	based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			80		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments			20		
	Essay			15		
	Examination		2-hour written exam	50		
	Test			15		
Required/recommended reading and online materials	Lecture notes provided by Course Coordinator I. de Pater and J. J. Lissauer: Planetary Sciences (Cambridge Univ. Press, 2010, 2nd Ed.) D. A. Rothery, N. McBride and I. Gilmour: An Introduction to the Solar System (Cambridge University Press, 2011, 2nd Ed.)					
Course Website	http://mo	odle.hku.hk				

PHYS4653 Cosmology (6 o	credits)		Academic Year	2014	
Offering Department	Physics		Quota		
Course Co-ordinator	Prof K S	Cheng, Physics (hrspksc@hku.hk)			
Teachers Involved		Prof K S Cheng, Physics Dr T Jumpei, Physics			
Course Objectives	mathema	The aim of the course is to offer an advanced introduction to cosmology, to familiarize students with t mathematical formulation used to model the evolution and dynamics of the universe, and to provide an to date discussion of the big bang theory and structure and galaxy formation.			
Course Contents & Topics	The big b	Topics include: The visible universe. Empirical basis for cosmological theories. The metric of the universe bang models. Thermodynamics of the early universe. Primordial nucleosynthesis. The very e universe. Inflationary models. The cosmological constant problem. Structure and galaxy formation.			
Course Learning Outcomes	1. Apply p 2. Explair 3. Demor	ssful completion of this course, students should be able to: shysics principles to describe the observational/experimenta the observed phenomena of cosmology strate knowledge and discuss the underlying physical conc	al aspects of cosmol	n the cosmologic	
	evolution	of the universe and with the dynamic interactive processes	that take place in th	e universe.	
Pre-requisites (and Co-requisites and Impermissible combination)		of the universe and with the dynamic interactive processes HYS3651 The physical universe or PHYS3652 Principles o	· · · · · · · · · · · · · · · · · · ·	e universe.	
(and Co-requisites and Impermissible combination)	Pass in P	<u> </u>	· · · · · · · · · · · · · · · · · · ·	e universe.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Pass in P	HYS3651 The physical universe or PHYS3652 Principles o	of astronomy		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Pass in P	HYS3651 The physical universe or PHYS3652 Principles o	of astronomy		
(and Co-requisites and	Pass in P Y 2nd	HYS3651 The physical universe or PHYS3652 Principles o	Examination owledge and skills required and logical thinking, with	May ed for attaining all the h evidence of origina	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in P Y 2nd N A+ to F	HYS3651 The physical universe or PHYS3652 Principles of sem Demonstrate thorough mastery at an advanced level of extensive kincourse learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex,	f astronomy Examination Examination owledge and skills requires and logical thinking, wit familiar and unfamiliar si	May ed for attaining all the h evidence of origina tuations. Apply highly ining at least most or hinking, and ability to	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in P Y 2nd N A+ to F	HYS3651 The physical universe or PHYS3652 Principles of disem Demonstrate thorough mastery at an advanced level of extensive knourse learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex, effective organizational and presentational skills. Demonstrate substantial command of a broad range of knowledge at the course learning outcomes. Show evidence of analytical and critical substantial command of a broad range of knowledge at the course learning outcomes. Show evidence of analytical and critical substantial command of a broad range of knowledge as the course learning outcomes. Show evidence of analytical and critical substantial command of a broad range of knowledge as the course learning outcomes.	Examination Examination owledge and skills requires and logical thinking, wit familiar and unfamiliar si and skills required for attacal abilities and logical trictive organizational and publicities and logical trictive organizational and publicities and logical thinking thinking thinking and logical thinking thinking the same publications and logical thinking thinking the same publications and logical thinking thinking the same publications and logical thinking the same publications are same publications.	May ed for attaining all the hevidence of origina tuations. Apply highly ining at least most on hinking, and ability to presentational skills. g most of the course g, and ability to apply	

Course Type	Fail	Show limited ability to applipresentational skills. Demonstrate little or no evioutcomes. Lack of analytica	outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical at Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizations presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attaining the course le outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Teaching	Activitie		Details	No. of Hours			
& Learning Activities	Lectures		Details	36			
	Tutorials			12			
	Reading / Self study			80			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Assignments			10			
	Examination		2-hour written exam	50			
	Presentation			15			
	Test			25			
Required/recommended reading and online materials	M. Lachie M. Rowar P. Coles	Lecture notes provided by Course Coordinator M. Lachieze-Rey: Cosmology: A First Course (Cambridge University Press, Cambridge, 1995) M. Rowan-Robinson: Cosmology (Clarendon Press, Oxford, 1996) P. Coles and F. Lucchin: Cosmology: The Origin and Evolution of Cosmic Structure (John Wile Chichester, 1995)					

PHYS4654 General relativ	ity (6 credit	ts)		Academic Year	2014				
Offering Department	Physics			Quota					
Course Co-ordinator	Dr K M Le	Dr K M Lee, Physics (kmlee@lily.physics.hku.hk)							
Teachers Involved	Dr K M Le	e, Physics							
Course Objectives		To introduce students to the field of general relativity. To provide conceptual skills and analytical tools necessary for astrophysical and cosmological applications of the theory.							
Course Contents & Topics	transport a	The Principle of equivalence. Inertial observers in a curved space-time. Vectors and tensors. Parallel transport and covariant differentiation. The Riemann tensor. The matter tensor. The Einstein gravitational field equations. The Schwarzschild solution. Black holes. Interior equations for spherically symmetric stars. Gravitational waves.							
Course Learning Outcomes	 Apply t systems ir Explair Newtoniar Demon 	On successful completion of this course, students should be able to: 1. Apply the mathematical and physical ideas of the theory of general relativity for the study of various systems in astrophysics and cosmology. 2. Explain the observational effects at the scale of the Solar System that cannot be described by Newtonian gravity from a general relativistic point of view. 3. Demonstrate knowledge and discuss the dynamic interactive physical processes in astrophysics by using a general relativistic approach.							
Pre-requisites and Co-requisites and mpermissible combination)	Pass in Pl	HYS2055 Introduction to relativity and F	PHYS3350 Classical	mechanics					
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec				
Offer in 2015 - 2016	N								
Course Grade	A+ to F								
Grade Descriptors	Α	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.							
	D	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.							
		the course learning outcomes. Show eviden	ce of analytical and critica	al abilities and logical th	ninking, and ability to				
	С	the course learning outcomes. Show eviden	ce of analytical and critica liar situations. Apply effect and of knowledge and skil analytical and critical abili	al abilities and logical the community of the community o	ninking, and ability to presentational skills. g most of the course g, and ability to apply				
		the course learning outcomes. Show eviden apply knowledge to familiar and some unfami Demonstrate general but incomplete comma learning outcomes. Show evidence of some	ce of analytical and critica liar situations. Apply effect und of knowledge and skil analytical and critical abili noderately effective organi knowledge and skills requi tt and logical thinking, bu	al abilities and logical the organizational and public required for attaining and logical thinking zational and presentation and the organizational and presentation and the organizational and presentation with limited analytical to with limited analytical and presentations.	ninking, and ability to resentational skills. g most of the course g, and ability to apply onal skills. of the course learning and critical abilities.				
	С	the course learning outcomes. Show eviden apply knowledge to familiar and some unfami Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Apply r Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to	ce of analytical and critica ilar situations. Apply effect ind of knowledge and skil analytical and critical abili noderately effective organi knowledge and skills requi it and logical thinking, but solve problems. Apply lind and of knowledge and skil ies, logical and coherent t	al abilities and logical the companizational and pure and logical thinking testing and logical thinking testing and presentatic red for attaining some the thinking testing and present and present the companies of the companies	ninking, and ability to resentational skills. g most of the course g, and ability to apply and skills. of the course learning and critical abilities. e organizational and g the course learning or no ability to apply				
Course Type	C D Fail	the course learning outcomes. Show eviden apply knowledge to familiar and some unfami Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Apply r Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical ability.	ce of analytical and critica ilar situations. Apply effect ind of knowledge and skil analytical and critical abili noderately effective organi knowledge and skills requi it and logical thinking, but solve problems. Apply lind and of knowledge and skil ies, logical and coherent t	al abilities and logical the companizational and pure and logical thinking testing and logical thinking testing and presentatic red for attaining some the thinking testing and present and present the companies of the companies	ninking, and ability to resentational skills. g most of the course g, and ability to apply and skills. of the course learning and critical abilities. e organizational and g the course learning or no ability to apply				
Course Type Course Teaching & Learning Activities	C D Fail	the course learning outcomes. Show eviden apply knowledge to familiar and some unfami Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Apply r Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems. Organization a assed course	ce of analytical and critica ilar situations. Apply effect ind of knowledge and skil analytical and critical abili noderately effective organi knowledge and skills requi it and logical thinking, but solve problems. Apply lind and of knowledge and skil ies, logical and coherent t	al abilities and logical the companizational and pure and logical thinking testing and logical thinking testing and presentatic red for attaining some the thinking testing and present and present the companies of the companies	ninking, and ability to resentational skills. g most of the course g, and ability to apply and skills. of the course learning and critical abilities. e organizational and g the course learning or no ability to apply				

	Tutorials		12				
	Reading / Self study		80				
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)				
	Assignments		20				
	Examination	2-hour written exam	60				
	Test		20				
Required/recommended reading and online materials	J. B. Hartle: Gravity: An Introduction						
Course Website	http://www.physics.hku.hk/~phys4654/						

PHYS4655 Interstellar med	dium (6 cre	edits)	Academic Ye	ar 2014				
Offering Department	Physics		Quota					
Course Co-ordinator	Dr M H Le	ee, Physics (mhlee@hku.hk)						
Teachers Involved	Dr M H Le	Dr M H Lee, Physics						
Course Objectives	absorption	This course provides students with an advanced-level understanding of the processes responsible for the absorption and emission of continuum and line radiation from gas and dust in stellar atmospheres and interstellar space, and their astrophysical applications and implications.						
Course Contents & Topics		Gas, dust, atoms, molecules, radiation; physical and radiative properties of hydrogen, helium and heavier elements; hydrogen clouds, molecular clouds; HII regions, nebulae, supernovae.						
Course Learning Outcomes	1. Express 2. Apply p ions.	3. Recognize which process or processes occur or dominate in which object or phase of the interstellar						
Pre-requisites (and Co-requisites and Impermissible combination)		HYS3651 The physical universe s & thermodynamics)	or (PHYS3351 Quantum mechanics and	I PHY3550 Statistica				
Offer in 2014 - 2015	Y 2nd	sem	Examination	May				
Offer in 2015 - 2016	N							
Course Grade	A+ to F							
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.							
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.							
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Lecture-ba	ased course						
Course Teaching	Activitie	S	Details	No. of Hours				
& Learning Activities	Lectures			36				
	Tutorials			12				
	Reading	/ Self study		80				
Assessment Methods and Weighting	Methods		Details	Weighting in fina course grade (%)				
	Assignme	ents		20				
	Essay			15				
	Examina	tion	2-hour written exam	50				
	Test			15				
Required/recommended		otes provided by Course Coordina	!	!				

reading and online materials	S. Kwok: Physics and Chemistry of the Interstellar Medium (University Sciences Book, 2007)
Course Website	http://moodle.hku.hk

PHYS4750 Experimental ph	ysics (6 c	redits)				Academic Year	2014
Offering Department	Physics	Physics				Quota	
Course Co-ordinator	TBC, Phys	BC, Physics ()					
Teachers Involved	TBC, Phys	SC, Physics					
Course Objectives	TBC	C					
Course Contents & Topics	TBC	BC					
Course Learning Outcomes	TBC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC						
Offer in 2014 - 2015	N					Examination	
Offer in 2015 - 2016	N						
Course Grade	A+ to F						
Grade Descriptors	Α						
	В						
	С						
	D						
	Fail						
Course Type	Lecture wi	th laboratory comp	onent	course			
Course Teaching & Learning Activities	Activities	<u> </u>		Details			No. of Hours
Assessment Methods and Weighting	Methods		Deta	ils			Weighting in final course grade (%)
Required/recommended reading and online materials	TBC						

PHYS4966 Physics interns	Acad	lemic Year	2014					
Offering Department	Physics		Quot	a				
Course Co-ordinator	Dr J C S F	un, Physics <i>(jcspun@hku.hk)</i>						
Teachers Involved	TBC, Phys	TBC, Physics						
Course Objectives	taken nori opportunit	This capstone course is offered to students majoring in physics, math/physics or astronomy. It should be taken normally in the summer immediately before their final year of study. It provides students with the opportunity to gain working experience in the field of physics or astronomy through intern placement. Students are expected to use what they have learnt in their majors in this intern.						
Course Contents & Topics	company, astronomy	Students will work as an intern for at least 160 hours within the University or outside the University in a company, government department or NGO. The work nature must be related to physics or astronomy. The internship should be arranged by the Department or obtained by students themselves. In the latter case, it must be approved before the commencement of the internship.						
Course Learning Outcomes	1. Apply p 2. Help to	sful completion of this course, students sho nysics or astronomy knowledge students ha create, propose or design part of the projec effective technical and inter-personal comm	ave learnt in their majo et he/she is working on					
Pre-requisites	Physics M	least 24 credits of advanced level (3XX ajor, Mathematics/Physics Major or Astronomy	omy Major curriculúm.	. ,	re courses of the			
(and Co-requisites and Impermissible combination)	This capst	one course is for Astronomy, Mathematics/	Physics, and Physics	iviajors stude	nts only.			
Impermissible combination)	·	one course is for Astronomy, Mathematics/ nmer		nination	nts only.			
Impermissible combination) Offer in 2014 - 2015	· ·	•		•	,			
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Y Sur	•		•	,			
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y Sur	•	vorkplace. Successfully har es effective collaboration a fills the requirements set or uation by supervisor(s), e	nination Indles and carries and communication to the Course	No Exam So out the work required on with supervisor(s), Description regarding			

Course Type	Internship		
Course Teaching & Learning Activities	Activities	Details	No. of Hours
& Learning Activities	Internship work	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)	160
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Written report	written report, employer's feedback and oral presentation	100
Required/recommended reading and online materials	To be provided by individual project sup	pervisor	
Additional Course Information	to those who have completed Year 2. Satisfactory completion of this course internship will be recorded on the stur Distinction" basis. Students who are ir obtain the approval. Enrolment of this course is not condu	ctorily completed their Year 3 study. Special of e can be counted towards the Capstone rec dent's transcript. This course will be assesse- interested to enrol in this course should conta cted via the online course selection system a gool office after approval has been obtained	quirement. Details of d on "Pass, Fail and ct the Department to and should be made

PHYS4999 Physics projec	t (12 credi	ts) Acc	ademic Year	2014				
Offering Department	Physics	Qu	ota					
Course Co-ordinator	Dr J K C	Dr J K C Leung, Physics (jkcleung@hku.hk)						
Teachers Involved	Various to	Various teachers in the department, Physics						
Course Objectives	for those normally themselv the know	This capstone course is offered to students majoring in physics, math/physics or astronomy. It is designed for those who are interested in tackling a research project in physics and/or astronomy. It should be taken normally in their final year of study. It provides students with the opportunity to study a specific problem by themselves, either theoretical, experimental or numerical, under the supervision of an academic staff using the knowledge the student gained in all years of his/her major study. The available projects are close to postgraduate level research in physics and/or astronomy.						
Course Contents & Topics	the conte	interested in taking this course should contact their prospective stents and the nature of their projects in the coming academic year the prospective supervisor and the course coordinator to take this	r. They must g					
	reviewing staff men some sop	retical and numerical projects: Students will receive training in reg, and make investigation which is close to research work in naturaber. The student may need to perform some original calculations objectivated derivations, or a combination of both. For numerical pouters to find numerical or simulation results.	re, under the a	supervision of ematical gaps of				
	For experimental projects: Students will carry out experiments in research labs under the supervision of a staff member. The student will receive a comprehensive training in advanced experimental techniques including preparation of samples, determination of physical properties, measurement of small signals obscured by noise, laser, high-vacuum and low-temperature techniques and so on. Wide reading of the relevant scientific literature and originality in experimental design are expected.							
Course Learning Outcomes	On successful completion of this course, students should be able to:							
	astronom 2. Review and resea 3. Criticiz 4. Descril 5. (For ti independ solutions 6. (For e	w the knowledge of a physics or astronomy problem in depth throarch journals based on what they have learnt in their majors. The existing approaches for solving the selected physics or astronoming the and explain connections between the physical principles and the heoretical or computational projects) identify the key issues of lently either by analytical or numerical means, and compare the res	ough literature by problem. e study problem the problem a sults with predict or astronomica	n. and solve ther tions or existing observations				
Pre-requisites (and Co-requisites and Impermissible combination)	Physics N	at least 24 credits of advanced level (3XXX level or above) co Major, Mathematics/Physics Major or Astronomy Major curriculum. Stone course is for Astronomy, Mathematics/Physics, and Physics I	. ,					
Offer in 2014 - 2015	N	Exa	amination					
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F							
Grade Descriptors	A	Demonstrate thorough grasp of the subject. Show strong analytical and critical evidence of original thought. Insightful use and critical analysis/evaluation of in high quality sources and to quote/reference aptly. Critical use of data and resustance. Supply highly effective organizational and presentational skills. Wadditional work beyond that is required in wider areas relevant to the topic.	nformation drawn tults to draw approp	from a full range or priate and insightfo				
	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different							

		secondary interpretations and to quote/reference aptly. Correct use of data of results to draw approprical conclusions. Apply effective organizational and presentational skills.					
	С	logical thinking. Use of relevant information interpretations and to quote/reference aptly	of the subject. Evidence of some analytical from sources, showing ability to make comp . Mostly correct but some erroneous use of effective organizational and presentational skills	arisons between different data and results to draw			
	D	coherent and logical thinking, but with limi several sources, but mainly through summa	etention of some relevant information, of the s ted analytical and critical abilities. Demonstra ary rather than analysis and comparison. Limit ally limited or barely effective organizational and	ate use and reference of ed ability to use data and			
	Fail	lack of analytical and critical abilities, logical	of the knowledge and understanding of the su and coherent thinking. Limited use of seconds sults and/or unable to draw appropriate conc or ineffective.	ary sources and no critical			
Course Type	Project-b	pased course					
Course Teaching	Activitie	es	Details	No. of Hours			
& Learning Activities	Meeting	with supervisor		54			
	Reading / Self study			126			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)			
	Oral pre	esentation	including supervisor's comments (10%)	30			
	Research report			70			
Required/recommended reading and online materials	To be pro	ovided by individual project supervisor					

PHYS6350 Graduate clas	sical mech	anics (6 credits)			Academic Year	2014		
Offering Department	Physics					Quota			
Course Co-ordinator	TBC, Ph	TBC, Physics ()							
Teachers Involved	TBC, Ph	BC, Physics							
Course Objectives	TBC	BC							
Course Contents & Topics	TBC	BC							
Course Learning Outcomes	TBC	TBC							
Pre-requisites (and Co-requisites and Impermissible combination)	TBC	TBC							
Offer in 2014 - 2015	N					Examination			
Offer in 2015 - 2016	Υ								
Course Grade	A+ to F								
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.							
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.							
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.							
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.							
	Fail	outcomes. Lack of	analytic	al and critical abilities,	logical and co		uired for attaining the course learning g. Show very little or no ability to apply hally effective or ineffective.		
Course Type	Lecture-l	based course							
Course Teaching & Learning Activities	Activitie	es		Details			No. of Hours		
Assessment Methods and Weighting	Method	ls	Deta	ails			eighting in final ourse grade (%)		
Required/recommended reading and online materials	TBC								

PHYS6351 Graduate	e quantum mechanics (6 credits)	Academic Year	2014

Offering Department	Physics				Quota			
Course Co-ordinator	TBC, Phy	vsics ()						
Teachers Involved	TBC, Phy	sics						
Course Objectives	TBC	BC						
Course Contents & Topics	TBC							
Course Learning Outcomes	TBC	BC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC	BC						
Offer in 2014 - 2015	N					Examination		
Offer in 2015 - 2016	Υ							
Course Grade	A+ to F							
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.						
	В	B Demonstrate substantial command of the knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, reasoned logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations using effective organizational and presentation skills.						
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail	outcomes. Lack of	analytica	al and critical abilities,	logical and coherer	skills required for attaining nt thinking. Show very little are minimally effective or in	or no ability to apply	
Course Type	Lecture-b	ased course						
Course Teaching & Learning Activities	Activitie	9S		Details			No. of Hours	
Assessment Methods and Weighting	Method	s	Deta	ils			Veighting in final course grade (%)	
Required/recommended reading and online materials	TBC							

PHYS6450 Graduate electr	romagnet	ism (6 credits)	Academic Year	2014			
Offering Department	Physics		Quota				
Course Co-ordinator	TBC, Ph	ysics ()					
Teachers Involved	TBC, Ph	BC, Physics					
Course Objectives	TBC						
Course Contents & Topics	TBC						
Course Learning Outcomes	TBC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC						
Offer in 2014 - 2015	N		Examination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of command of knowledge outcomes. Lack of analytical and critical abilities, logical and co knowledge to solve problems. Organization and presentational statements.	herent thinking. Show very little	or no ability to appl			
Course Type	- I.	based course					

Course Teaching & Learning Activities	Activities		Details	No. of Hours
Assessment Methods and Weighting	Methods	Deta	iils	Weighting in final course grade (%)
Required/recommended reading and online materials	TBC			

PHYS6550 Graduate statis	tical mech	anics (6 credits	s)		Academic Year	2014	
Offering Department	Physics				Quota		
Course Co-ordinator	TBC, Phys	BC, Physics ()					
Teachers Involved	TBC, Phys	sics					
Course Objectives	TBC						
Course Contents & Topics	TBC						
Course Learning Outcomes	TBC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC						
Offer in 2014 - 2015	N				Examination		
Offer in 2015 - 2016	N						
Course Grade	A+ to F	A+ to F					
Grade Descriptors	A	course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origina thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.						
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail	outcomes. Lack of a	r no evidence of command on analytical and critical abilities, problems. Organization and p	logical and coherent this	nking. Show very little	or no ability to app	
Course Type	Lecture-ba	ased course					
Course Teaching & Learning Activities	Activities	s	Details			No. of Hou	
Assessment Methods and Weighting	Methods	i	Details			eighting in fin ourse grade (%	
Required/recommended reading	TBC						

PHYS6551 Solid state physi	ics (6 cred	its)	Academic Year	2014			
Offering Department	Physics	hysics Quota					
Course Co-ordinator	TBC, Physi	TBC, Physics ()					
Teachers Involved	TBC, Physi	ics					
Course Objectives	TBC						
Course Contents & Topics	TBC						
Course Learning Outcomes	TBC	TBC					
Pre-requisites (and Co-requisites and Impermissible combination)	TBC	TBC					
Offer in 2014 - 2015	N		Examination				
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origina thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Demonstrate substantial command of the knowledge and skills required for attaining most of the course learning					

Required/recommended reading and online materials	TBC				234.00 g.440 (70)	
Assessment Methods and Weighting	Method	ls			Weighting in final course grade (%)	
Course Teaching & Learning Activities	Activiti	es	Details		No. of Hours	
Course Type	Lecture-	based course				
	Fail	outcomes. Lack of	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learn outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to an knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and Show limited ability to apply knowledge to solve problems using limited or barely effective organizational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective observation skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	В			ritical abilities, reasoned logic g effective organizational and	al thinking, and ability to apply knowledge d presentation skills.	

PHYS6650 Stellar atmosp	heres (6 cr	edits)				Academic Year	2014
Offering Department	Physics					Quota	
Course Co-ordinator	TBC, Phy	TBC, Physics ()					
Teachers Involved	TBC, Phy	/sics					
Course Objectives	TBC						
Course Contents & Topics	TBC						
Course Learning Outcomes	TBC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC						
Offer in 2014 - 2015	N					Examination	
Offer in 2015 - 2016	N						
Course Grade	A+ to F						
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	B Demonstrate substantial command of the knowledge and skills required for attaining most of the course learning outcomes. Show evidence of analytical and critical abilities, reasoned logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations using effective organizational and presentation skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective observation skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions.					
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems using limited or barely effective organizational and presentational skills.					
	Fail	outcomes. Lack of	analytic	al and critical abilities, I	ogical and c	e and skills required for attaining coherent thinking. Show very little skills are minimally effective or in	or no ability to apply
Course Type	Lecture-b	ased course					
Course Teaching & Learning Activities	Activitie	es		Details			No. of Hours
Assessment Methods and Weighting	Methods	s	Deta	ails			eighting in final ourse grade (%)
Required/recommended reading and online materials	TBC						

PHYS6750 Nanophysics (6 credits) Academic Ye			Academic Year	2014
Offering Department	Physics	Quota		
Course Co-ordinator	TBC, Physics ()			
Teachers Involved	TBC, Physics			
Course Objectives	TBC			

Course Contents & Topics	TBC						
Course Learning Outcomes	TBC						
Pre-requisites (and Co-requisites and Impermissible combination)	TBC						
Offer in 2014 - 2015	N	N Examination					
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills req course learning outcomes. Show strong analytical and critical abilities and logical thinking, thought, and ability to apply knowledge to a wide range of complex, familiar and unfamilial effective organizational and presentational skills.						evidence of original
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.						
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Lecture-b	pased course					
Course Teaching & Learning Activities	Activitie	es		Details			No. of Hours
Assessment Methods and Weighting	Method	s	Deta	ils			eighting in final ourse grade (%)
Required/recommended reading and online materials	TBC						

ENVS3006 Environmental	radiation (6	credits)	Academic Year	2014		
Offering Department	Physics		Quota			
Course Co-ordinator	Dr J K C Le	eung, Physics <i>(jkcleung@hku.hk)</i>				
Teachers Involved	Dr J K C Le	eung, Physics				
Course Objectives	techniques	s course, students will learn about various kinds of radiations in the environment, the experimen iliques to detect them, the methods to trace them and to assess their hazard to the environment, a rays to reduce the hazard in events of nuclear accidents or incidents.				
Course Contents & Topics	nuclear poi impact to measuring	e course will cover naturally occurring radiation sources and man-made radiation sources includiclear power plants; transport models for radionuclides in the environment; nuclear accidents and pact to the environment; radiation risk assessment and emergency preparedness; techniques transporting low level radioactivities; nuclear techniques in ecology; concept of radiation protection man species and non-human species.				
Course Learning Outcomes	1. Realise s 2. Explain a 3. Detect a 4. Justify, c	sful completion of the course, students should be able to sources and transport of radionuclides in the environmer and assess the impact to the environment from the use of and measure low level radioactivities in environmental same to ptimize, and assess the risk of using radiation and nucle and contrast the environmental impacts from nuclear e	nt. of nuclear energies. mples. ear technologies.	s of energy.		
Pre-requisites (and Co-requisites and Impermissible combination)		YS2265 Modern physics or CHEM2041 Principles of observations of ENVS2002 Environmental data analysis	chemistry or ENVS20	01 Environmenta		
Offer in 2014 - 2015	Y 1st s	em	Examination	Dec		
Offer in 2015 - 2016	N		·			
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. Apply highly effective lab skills and techniques. Critical use of data and results to draw appropriate and insightful conclusions.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. Apply effective lab skills and techniques. Correct use of data of results to draw appropriate conclusions.					
	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw					

		appropriate conclusions.				
	D	Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to presentational skills. Apply partially effective appropriate conclusions.	ited analytical and critical abilities. parely effective organizational and			
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course lear outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to a knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective. A minimally effective or ineffective lab skills and techniques. Misuse of data and results and/or unable to appropriate conclusions.				
Course Type	Lecture v	vith laboratory component course				
Course Teaching & Learning Activities	Activitie	9\$	Details	No. of Hours		
a Learning Activities	Lectures			36		
	Laboratory			2		
	Field work			8		
	Tutorials	3		8		
	Reading / Self study			80		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments			20		
	Examina	ation	2-hour written exam	60		
	Laborato	ory reports		10		
	Presentation			10		
Required/recommended reading and online materials	Sources Robert C David Bo	Merril Eisenbud and Thomas Gesell: Environmental Radioactivity: from Natural, Industrial, and Militan Sources (Academic Press, 1997) Robert C. Morris: The Environmental Case for Nuclear Power (Paragon House, 2000) David Bodansky: Nuclear Energy - Principles, Practices and Prospects (American Institute of Physic Press, 1996)				
Course Website	http://mod	odle.hku.hk				

ENVS3010 Sustainable en	ergy and er	vironment (6 credits)	Academic Year	2014			
Offering Department	Physics		Quota				
Course Co-ordinator	Prof A B D	Prof A B Djurisic, Physics (dalek@hku.hk)					
Teachers Involved	Prof A B D	jurisic, Physics					
Course Objectives	technologi The technologi	n this course, the students will learn about sustainability and environmental impact of different energy echnologies, including conventional energy sources as well as renewable and/or clean energy sources. The technological challenges, potential for future development, and environmental impacts (communit egional, and global) will be discussed.					
Course Contents & Topics	methods technologi	The course will cover energy production and use, environmental impact of energy use, fossil fuels an methods for making them more sustainable, clean fuels, electricity generation, renewable energy technologies (with emphasis on biomass, wind and solar energy), hydrogen, energy storage, and energy conservation.					
Course Learning Outcomes	1. Define to 2. Explain	On successful completion of the course, students should be able to: 1. Define the concept of sustainable development. 2. Explain the challenges and potential for development of various energy technologies. 3. Compare the environmental impact of conventional and new energy technologies.					
Pre-requisites	Pass in Pl	Pass in PHYS2260 Heat and waves or CHEM2041 Principles of chemistry or ENVS2001 Environment field and lab course or ENVS2002 Environmental data analysis					
	field and la	b course or ENVS2002 Environmental data analysi	s				
mpermissible combination)	field and la	b course or ENVS2002 Environmental data analysi	S Examination				
mpermissible combination) Offer in 2014 - 2015		b course or ENVS2002 Environmental data analysi	s				
mpermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	N	b course or ENVS2002 Environmental data analysi	s				
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	N Y	Demonstrate thorough mastery at an advanced level of exter course learning outcomes. Show strong analytical and critica thought, and ability to apply knowledge to a wide range of coeffective organizational and presentational skills.	Examination Examination Insive knowledge and skills required abilities and logical thinking, with	d for attaining all the			
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N Y A+ to F	Demonstrate thorough mastery at an advanced level of exter course learning outcomes. Show strong analytical and critica thought, and ability to apply knowledge to a wide range of co	Examination Sive knowledge and skills required I abilities and logical thinking, with omplex, familiar and unfamiliar siturely ledge and skills required for attain and critical abilities and logical thinking.	d for attaining all the evidence of origin lations. Apply high hing at least most nking, and ability			
Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	N Y A+ to F	Demonstrate thorough mastery at an advanced level of exter course learning outcomes. Show strong analytical and critica thought, and ability to apply knowledge to a wide range of coeffective organizational and presentational skills. Demonstrate substantial command of a broad range of know the course learning outcomes. Show evidence of analytical	Examination Exami	d for attaining all the evidence of originations. Apply high thing at least most mking, and ability esentational skills. most of the cours and ability to app			

	Fail	outcomes. Lack of analytical and	e of command of knowledge and skills required critical abilities, logical and coherent thinking. Sh ganization and presentational skills are minimally	now very little or no ability to apply			
Course Type	Lecture-b	Lecture-based course					
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours			
& Learning Activities	Lectures			36			
	Tutorials			12			
	Reading	/ Self study		80			
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)			
	Examina	tion	2-hour written exam	50			
	Presenta	ition		50			
Required/recommended reading and online materials	Godfrey E G. Boyle, (The Ope	Lecture notes provided by Course Coordinator Godfrey Boyle: Renewable Energy: Power for a Sustainable Future (Oxford University Press, 2003) G. Boyle, B. Everett, and J. Ramage: Energy Systems and Sustainability: Power for a Sustainable F (The Open University, 2003) R. M. Dell and D. A. J. Rand: Clean Energy (The Royal Society of Chemistry, 2004)					

Offering Department	Faculty			Quota		
Course Co-ordinator	,	nm, Statistics & Actuarial Science (hr.	ntlkf@hku.hk\	4		
Teachers Involved	Dr K F La Dr W M Y Dr R K W	im, Statistics & Actuarial Science ' Cheung, Faculty of Science ' Lui, Faculty of Science Yung, Faculty of Science	mini ©ind.im)			
Course Objectives	and impa	ctives are to give students a holistic act on civilization and society; to ear, and to introduce to students mai	equip students with bas	sic skills of logical	and quantitative	
Course Contents & Topics	DemarcSharedScientifi	e nature and methodology of science ation between science and non-scient features of the sciences c method e of mathematics in the historical devi	nce			
	a. Mather - Founda - Mathem - Mathem - Guessti - Differen - Linear a	tion of mathematics atics and advancement of science - atical modelling - an introduction mation ce equations lgebra and matrices s and differential equations	an introduction			
	StatisticConfideHypotheDecision		statistics			
Course Learning Outcomes	On succe	essful completion of this course, stude	ents should be able to:			
		 Describe key aspects of scientific methodology. Describe the key elements of the foundation of mathematics and statistics. Identify the mathematics that underlies scientific problems. Apply logical and quantitative reasoning to re-formulate both real life and scientific problems i mathematical terms, and to interpret their solutions. 				
	 Identify Apply 	the mathematics that underlies scie logical and quantitative reasoning	n of mathematics and st ntific problems. to re-formulate both		ntific problems in	
Pre-requisites (and Co-requisites and Impermissible combination)	3. Identify 4. Apply mathema NIL (This cou	with the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions are is compulsory for all students	n of mathematics and st ntific problems. to re-formulate both ttions.	real life and scier	·	
(and Co-requisites and Impermissible combination)	3. Identify 4. Apply mathema NIL (This cou	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solu	n of mathematics and st ntific problems. to re-formulate both ttions.	real life and scier	aculty of Science.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	3. Identify 4. Apply mathema NIL (This cou	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutives is compulsory for all students should take this course in their first y	n of mathematics and st ntific problems. to re-formulate both ttions.	real life and scien	aculty of Science.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	3. Identify 4. Apply mathema NIL (This cou Students Y 1st	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutives is compulsory for all students should take this course in their first y	n of mathematics and st ntific problems. to re-formulate both ttions.	real life and scien	aculty of Science.	
(and Co-requisites and	3. Identify 4. Apply mathema NIL (This cou Students Y 1st	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutives is compulsory for all students should take this course in their first y	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.)	real life and scient offered by the Fate Examination equired for attaining all ting, and ability to apply	Dec May the course learning knowledge to a wide	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Identify 4. Apply mathema NIL (This cou Students Y 1st Y A+ to F	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions is compulsory for all students should take this course in their first years are 2nd sem Demonstrate thorough mastery of extensional process. Show strong analytical and critange of familiar and unfamiliar situation	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.) sive knowledge and skills re titical abilities and logical think is. Carry out computations corroad range of knowledge and dence of analytical and critical familiar situations. Carry out	real life and scient of the Farman of the Fa	Dec May The course learning knowledge to a wide Apply highly effective binking, and ability to a careful and correct	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Identify 4. Apply mathema NIL (This cou Students Y 1st Y A+ to F	Demonstrate thorough mastery of exter outcomes. Show strong analytical and or aniliar and unfamiliar situation organizational and presentational skills. Demonstrate thorough mastery of exter outcomes. Show strong analytical and or range of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a the course learning outcomes. Show evi apply knowledge to familiar and some ur	n of mathematics and st ntific problems. to re-formulate both itions. taking a Science major year.) sive knowledge and skills retical abilities and logical think is. Carry out computations coroad range of knowledge and dence of analytical and critical familiar situations. Cary out all errors. Apply effective organmand of knowledge and skills me analytical and critical abilities and cri	equired for attaining all and scient examination Examination Equired for attaining all and ability to apply arefully and correctly. A deciring and abilities and logical to computations mostly in inizational and presenta	Dec May the course learning knowledge to a wide Apply highly effective thining at least most of hinking, and ability to a careful and correct tional skills. g most of the course g, and ability to apply	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Identify 4. Apply mathema NIL (This cou Students Y 1st Y A+ to F A B	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions is compulsory for all students should take this course in their first yet sem. 2nd sem. Demonstrate thorough mastery of extendituce of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a the course learning outcomes. Show evidence of solutions way, but commit some minor computation. Demonstrate general but incomplete cor learning outcomes. Show evidence of so knowledge to most familiar situations. Co	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.) sive knowledge and skills retained abilities and logical think is. Carry out computations coroad range of knowledge and still and critical abilities and critical abilities and critical and critical familiar situations. Carry out all errors. Apply effective organ mmand of knowledge and skills me analytical and critical abilimmit a number of minor corroct knowledge and skills requerent and logical thinking, but to solve problems. Commit s	Examination Examination Equired for attaining all sing, and ability to apply arefully and correctly. It is a shall be a	Dec May the course learning knowledge to a wide Apply highly effective tining at least most of hinking, and ability to a careful and correct tional skills. g most of the course g, and ability to apply moderately effective of the course learning and critical abilities.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Identify 4. Apply mathema NIL (This council Students Y 1st Y A+ to F A B	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions is compulsory for all students should take this course in their first yet sem. 2nd sem. Demonstrate thorough mastery of extenditudence. Show strong analytical and crange of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a the course learning outcomes. Show evidence of so knowledge to familiar and some urway, but commit some minor computation. Demonstrate general but incomplete corderning outcomes. Show evidence of so knowledge to most familiar situations. Coorganizational and presentational skills. Demonstrate partial but limited command outcomes. Show evidence of some cohes Show limited ability to apply knowledge.	n of mathematics and st ntific problems. to re-formulate both titons. taking a Science major rear.) sive knowledge and skills rearent abilities and logical think is. Carry out computations coroad range of knowledge and dence of analytical and critical abilities, and critical abilities and logical think is. Carry out all errors. Apply effective organism and of knowledge and skills requested and selection of knowledge and skills requested and ski	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May The course learning knowledge to a wide Apply highly effective a careful and correct tional skills. If the course learning and ability to a careful and correct tional skills. If the course learning and critical abilities and critical abilities. Itational errors. Apply the course learning and critical abilities. Itational errors. Apply the course learning and critical abilities. Itational errors ability to apply the course learning and critical abilities.	
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	3. Identify 4. Apply mathema NIL (This council Students Y 1st Y A+ to F A B C	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions and to interpret their solutions is should take this course in their first yet sem. 2nd sem. Demonstrate thorough mastery of extenditure of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a business of familiar and some unway, but commit some minor computation. Demonstrate general but incomplete corderaning outcomes. Show evidence of so knowledge to most familiar situations. Or organizational and presentational skills. Demonstrate peneral but incomplete corderaning outcomes. Show evidence of some cohes how limited ability to apply knowledge limited or barely effective organizational and Demonstrate little or no evidence of conductomes. Lack of analytical and critical a knowledge to solve problems. Commit	n of mathematics and st ntific problems. to re-formulate both titons. taking a Science major rear.) sive knowledge and skills rearent abilities and logical think is. Carry out computations coroad range of knowledge and dence of analytical and critical abilities, and critical abilities and logical think is. Carry out all errors. Apply effective organism and of knowledge and skills requested and selection of knowledge and skills requested and ski	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May The course learning knowledge to a wide Apply highly effective a reful and correct tional skills. If the course learning and ability to a careful and correct tional skills. If the course learning and critical abilities and critical abilities. Itational errors. Apply the course learning and critical abilities and critical abilities. Itational errors. Apply the course learning and critical abilities are the course learning and critical abilities.	
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	3. Identify 4. Apply mathema NIL (This council Students Y 1st Y A+ to F A B C	the mathematics that underlies scie logical and quantitative reasoning tical terms, and to interpret their solutions and to interpret their solutions is should take this course in their first yet sem. 2nd sem. Demonstrate thorough mastery of extending outcomes. Show strong analytical and critange of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a bithe course learning outcomes. Show evidence of so knowledge to familiar and some unway, but commit some minor computation. Demonstrate general but incomplete confearning outcomes. Show evidence of so knowledge to most familiar situations. Of organizational and presentational skills. Demonstrate partial but limited command outcomes. Show evidence of some cohes show limited ability to apply knowledge limited or barely effective organizational and Demonstrate little or no evidence of confuctomes. Lack of analytical and critical knowledge to solve problems. Commit minimally effective or ineffective.	n of mathematics and st ntific problems. to re-formulate both titons. taking a Science major rear.) sive knowledge and skills rearent abilities and logical think is. Carry out computations coroad range of knowledge and dence of analytical and critical abilities, and critical abilities and logical think is. Carry out all errors. Apply effective organism and of knowledge and skills requested and selection of knowledge and skills requested and ski	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May The course learning knowledge to a wide Apply highly effective a reful and correct tional skills. If the course learning and ability to a careful and correct tional skills. If the course learning and critical abilities and critical abilities. Itational errors. Apply the course learning and critical abilities and critical abilities. Itational errors. Apply the course learning and critical abilities are the course learning and critical abilities.	
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	3. Identify 4. Apply mathema NIL (This council Students Y 1st Y A+ to F A B C D Fail	Demonstrate thorough mastery of extensional stillar and controverses of familiar and underlies strange of familiar and underlies depending outcomes. Show strong analytical and or range of familiar and unfamiliar situation organizational and presentational skills. Demonstrate substantial command of a the course learning outcomes. Show evidence of so knowledge to most familiar situations. Conganizational and presentational skills. Demonstrate general but incomplete cor learning outcomes. Show evidence of so knowledge to most familiar situations. Conganizational and presentational skills. Demonstrate partial but limited command outcomes. Show evidence of sone cohe show limited ability to apply knowledge limited or barely effective organizational and Demonstrate little or no evidence of con outcomes. Lack of analytical and critical a knowledge to solve problems. Commit minimally effective or ineffective.	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.) sive knowledge and skills retical abilities and logical think is. Carry out computations coroad range of knowledge and skills requirement and of knowledge and skills requirement and logical thinking. But only the solve problems. Commit similar and of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills. In the solve problems of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills.	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May The course learning knowledge to a wide Apply highly effective an ability to a careful and correct tional skills. If and ability to a poly moderately effective of the course g, and ability to apply moderately effective of the course learning and critical abilities. Itational errors. Apply g the course learning a or no ability to apply sentational skills are	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Identify 4. Apply mathema NIL (This country of 1st) Y 1st Y A+ to F A B C D Fail Lecture-b Activitie	Demonstrate thorough mastery of extensional strate of familiar and underlies should take this course in their first years and to interpret their solutions in their first years and to interpret their solutions in their first years and to interpret their solutions in their first years and their first years are and to take this course in their first years and their first years are and their first years and their first years are and their first years and their finterpret years and their first years and their first years and th	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.) sive knowledge and skills retical abilities and logical think is. Carry out computations coroad range of knowledge and skills requirement and of knowledge and skills requirement and logical thinking. But only the solve problems. Commit similar and of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills. In the solve problems of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills.	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May The course learning knowledge to a wide Apply highly effective and ability to a careful and correct tional skills. If the course learning and ability to a careful and correct inonal skills. If the course learning and critical abilities and critical abilities. Itational errors. Apply go the course learning and critical abilities are ability to apply sentational errors. Apply go the course learning and critical abilities are ability to apply sentational skills are	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	3. Identify 4. Apply mathema NIL (This council Students Y 1st Y A+ to F A B C D Fail Lecture-b Activitie Lectures Tutorials	Demonstrate thorough mastery of extensional strate of familiar and underlies should take this course in their first years and to interpret their solutions in their first years and to interpret their solutions in their first years and to interpret their solutions in their first years and their first years are and to take this course in their first years and their first years are and their first years and their first years are and their first years and their finterpret years and their first years and their first years and th	n of mathematics and st ntific problems. to re-formulate both titions. taking a Science major rear.) sive knowledge and skills retical abilities and logical think is. Carry out computations coroad range of knowledge and skills requirement and of knowledge and skills requirement and logical thinking. But only the solve problems. Commit similar and of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills. In the solve problems of knowledge and skills requirement and logical thinking, but to solve problems. Commit sind presentational skills.	real life and scier offered by the Fa Examination equired for attaining all ing, and ability to apply arefully and correctly. In a still it is a simple of the second putations mostly in nizational and presentary it is required for attaining the second putation and presentary it is required for attaining the second putational errors. Apply it is required for attaining some at with limited analytical in the substantial computational errors. Its required for attaining thinking. Show very little.	Dec May I the course learning knowledge to a wide Apply highly effective a careful and correct tional skills. Ig most of the course g, and ability to apply moderately effective of the course learning and critical abilities. Apply and critical abilities. Itational errors. Apply I sentational skills are No. of Hours No. of Hours	

and Weighting			course grade (%)
	Assignments		20
	Examination	2-hour examination	40
	Project reports		20
	Test		20
Required/recommended reading and online materials	TBC		

SCNC1112 Fundamentals	oi illoueill	science (o credita)	Academic Year	2014	
Offering Department	Faculty		Quota		
Course Co-ordinator	Dr J C S P	un, Physics <i>(jcspun@hku.hk)</i>			
Teachers Involved	Prof A S C Prof A S T Dr J S C L	un (2nd sem), Physics Cheung (1st & 2nd sem), Chemistry Wong (1st sem), Biological Sciences eung (2nd sem), Faculty e (1st sem), Earth Sciences			
Course Objectives	science. T sciences, o used in va fundament	se aims to provide students an overview of the giant his course adopts an integrated approach and encochemistry, and biology, and focuses on the general principarious disciplines to describe the diverse phenomena at laws of each discipline, the historical developments of different science disciplines will be introduced	mpasses physics, a place in the national state in the national state in the madern for the modern for the moder	astronomy, earth ncepts of scienc atural world. The	
Course Contents & Topics	(2) Fundar - Structure - The quar - Elementa (3) Atoms - Matters a - Chemical - Importan - Nanoscie (4) DNA/6 - Molecule - Genomic (5) Cells a (6) Organis - The origi - Ecology a (7) Earth a - Solid Ear - Earth's m	tum world ry particles and standard model and molecules nd atoms: The periodic table bonds and chemical reactions molecules: water, carbon, molecular cluster nce and nanotechnology enetic s of life s and DNA; Genetics and inheritance nd systems am and environment n and evolution of life and environment nd Beyond th, Earth's atmosphere and hydrosphere otion in space he Sun, and the solar system			
Course Learning Outcomes	 Acquire scientific ir Underst Apprecinterdiscipl Critically Develop 	an understanding of the historical development of mode quiry methods, and the role of science in the advancement and and be familiar with the fundamental scientific principle intended in the diversity of different scientific disciplines intended in the diversity of different scientific disciplines intended in the diversity of different scientific disciplines in and creatively appraise received ideas and established is curiosity in science and an appreciation of sciences as refiling learning.	ern science, the essont of civilization over es and concepts. and develop multi- anowledge.	time. disciplinary and	
Pre-requisites and Co-requisites and mpermissible combination)		se is compulsory for all students taking a Science majo hould take this course in their first year.)	or offered by the Fa	culty of Science	
Offer in 2014 - 2015		sem 2nd sem	Examination	Dec May	
Offer in 2015 - 2016	Υ 100			,	
Course Grade	A+ to F				
Grade Descriptors		Demonstrate therewish meeters of systems is knowledge and skills	veguined for etteining all	the course leavein	
nade bescriptors	В	Demonstrate thorough mastery of extensive knowledge and skills outcomes. Show strong analytical and critical abilities and logical the ability to apply knowledge to a wide range of complex, familiar and skills and techniques. Critical use of data and results to draw approximate of the approximation of	ninking, with evidence of unfamiliar situations. Applopriate and insightful cond and skills required for attain ical abilities and logical the ective lab skills and techn	original thought, and by highly effective la clusions Apply highly ining at least most chinking, and ability to iques. Correct use of the correct uses of the correct	
	data of results to draw appropriate conclusions. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective lab skills and techniques. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and				

		presentational skills.		
	D	outcomes. Show evidence of some of Show limited ability to apply knowledge	nd of knowledge and skills required for attain oherent and logical thinking, but with limited to solve problems. Apply partially effective la appropriate conclusions. Apply limited or bar	analytical and critical abilities. ab skills and techniques. Limited
	Fail	outcomes. Lack of analytical and critical knowledge to solve problems. Apply m	command of knowledge and skills required for al abilities, logical and coherent thinking. Show inimally effective or ineffective lab / fieldwork appropriate conclusions. Organization and pr	w very little or no ability to apply skills and techniques. Misuse of
Course Type	Lecture w	rith laboratory component course		
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours
a Learning Activities	Lectures			36
	Laboratory			2
	Tutorials			12
	Reading / Self study			94
	Assessment		1 hour in-class quiz	1
Assessment Methods and Weighting	Methods	3	Details	Weighting in final course grade (%)
	Assignm	ents	tutorials and homework	20
	Examination			50
	Presenta	ition	project presentation	20
	Test			10
Required/recommended reading and online materials	Reference Biology: Benjamin	es: Integrated Science by Tillery, E	h by Trefil & Hazen 7th Edition (2013 inger, & Ross 5th Edition (2011, McG by Campbell, Mitchell, & Reeco ndahl & Zumdahl (2012 Cengage)	GrawHill)

SCNC2121 Sustainable for	od production (6 credits)	Academic Year	2014		
Offering Department	Faculty	Quota	32		
Course Co-ordinator	Dr H S El-Nezami, Biological Sciences (elnezami@hku.hk)				
Teachers Involved	Dr H S El-Nezami, Biological Sciences Dr DeLisa Lewis, UBC Faculty of Land and Food Systems				
Course Objectives	This course is designed to provide students with the opportunity to experience the inner-workings of a sustainable, campus farming operation, and to make connections between the ecosystems that nourish the thriving, urban communities surrounding the farm. Students will participate in plenary sessions with course instructors and guest lecturers from the UBC Faculty of Land and Food Systems, in guided group discussions, field trips on and off-campus, and in a variety of seasonal, hands-on farming activities.				
Course Contents & Topics	The MacMillan building, home of the UBC Faculty of Lar plenary sessions, guest speaker lectures, and morning grou in UBC is the site of the majority of farming activities, ir Fridays and market Saturdays. Students will have a chance spots, including the LFS orchard garden, the world-class C innovative campus chef, Steve Golieb, and the wiggle wo Students will also venture off-campus to two the Vancouver Market to provide a comparative view of marketing syste context. The main approach to learning with this course is student-cmeet course learning objectives, students are expected contribute to group discussions and the group oral preseigornals on each of the four main course themes-soils, biodi	up discussion sessions. The including afternoon group die to explore the UBC campublished by the series of the Student UF Farmers' Market and to Grams and the regionally group entered learning and hands to attend and participate intation, and to complete a	south campus farn scussions, harves is sustainability ho Vanier, home of ar nion Building/SUB anville Island Publianded food systemon experience. To in all sessions, to		
Course Learning Outcomes	On successful completion of this course, students should be 1. Connect underlying agroecosystem concepts and so practices of sustainable farming. 2. Observe and compare multiple models of agricultural for setting. 3. Identify multiple strategies for creating on-farm biodiversit 4. Demonstrate a basic understanding of composting fundar 5. Demonstrate the ability to perform a select set of bar packing techniques in a sustainable campus farm setting. 6. Demonstrate best practices with post-harvest handling ar	e able to: il science fundamentals wood production in an urbanty. mentals. sic crop maintenance, harv	and campus farm		
Pre-requisites (and Co-requisites and Impermissible combination)	Students are expected to have passed at least 30 credi Students will also need to pass an interview in order to be e		2 science courses.		
Offer in 2014 - 2015	Y Summer	Examination	No Exam		
Offer in 2015 - 2016	Υ				

Course Grade	A+ to F					
Grade Descriptors	A Clear understanding of the basics from sustainable farming to marketing strategies used by sustainable farming operations. Ability to perform crop maintenance, harvest, washing, and packing in a sustainable campus farm setting. Ability to demonstrate solid team-based skills for performance of fieldwork, and distinct performance in different assessment components. Ability to synthesize the lessons learned during the course and articulate individual learning objectives for further studies in agriculture, food and human health.					
	B Clear understanding of the basics from sustainable farming to marketing strategies used by sustainable farming operations. Ability to perform crop maintenance, harvest, washing, and packing in a sustainable campus farm setting. Ability to demonstrate solid team-based skills for performance of fieldwork, and distinct performance in different assessment components.					
	С	Understanding of the basics from sustainable farming to marketing strategies used by sustainable farming operations. Ability to perform crop maintenance, harvest, washing, and packing in a sustainable campus farm setting. Satisfactory demonstration of team-based skills for performance of fieldwork, and satisfactory performance in different assessment components.				
	D	Knowing some of the basics of sustainable farming. Active participation in team-based fieldwork, and satisfactory performance in different assessment components.				
	Fail	Fail to follow the basics of sustainable farm and/or fieldwork.	ning as demonstrated by unsatisfactory perfe	ormance in assignments		
Course Type	Field camp	os .				
Course Teaching & Learning Activities	Activities	·	Details	No. of Hours		
& Learning Activities	Lectures			20		
	Field work	· ·		50		
	Presentation		Group discussion / Project	10		
	Reading /	Self study		50		
	Assessment		End of trip report	30		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments		To be announced by UBC Faculty of Land and Food Systems	40		
	Report		The end of trip report should be 7-10 pages (not including the references). Please refer to Remarks for format requirements.	60		
Required/recommended reading and online materials	UBC Facul	lty of Land and Food Systems will give	reading materials to students.			
Course Website	http://www.	.scifac.hku.hk/news/bsc/ubc-summer-c	course			
Additional Course Information	Please note: Students have to cover their own travel costs and course fees charged by the hosting institution (prices to be announced). This course will be offered subject to a minimum enrollment number and availability of teachers. Enrolment of this course is not conducted via the online course selection system. Students will be enrolled manually by the Faculty after approval has been obtained from the course coordinator. This course is taught by staff in UBC and the end of trip report is graded by Dr H S El-Nezami.					
	Remarks: The end of trip report should be 7-10 pages (not including the references). Please use Times New Roman (12 points), single space and 2 cm margins from all sides. The report can cover any of the areas discussed during the course. The marking criteria are the scientific quality (free from scientific jargon, well referenced, use of tables or figures to summarize important data, a conclusion section that contains own views and ideas in relation to the topic discussed in the report, and be free from typographical errors).					

SCINGZ 122 Warnie lile Sci	ence: a North East Pacific perspective (6 credits)	Academic Year	2014
Offering Department	Faculty	Quota	32
Course Co-ordinator	Dr T Vengatesen, Biological Sciences (rajan@hku.hk)		<u>'</u>
Teachers Involved	Dr T Vengatesen, Biological Sciences Prof S Kwok, Faculty of Science Prof R S S Wu, Biological Sciences		
Course Objectives	Marine Life Science is an integrated study of how the oceans marine biology through biophysical interactions. By studying the Ocean, students will learn marine habitats as habitable plan biodiversity, the complex interactions between the physical ar services the coastal oceans provide to human. This course students to experience the diversity of marine life on the other s	ne temperate cold wate let, to appreciate the cond biological componer will provide an excell	rs of the NE Pacific lynamics of marine ts, fishery, and the
Course Contents & Topics	Lectures from both HKU and UBC teachers will introduce 'marin	na lifa nainmanlı with a fe	

	coastal had techniques a different l students, b	ere will also be several opportunities bitats, sandy beaches and estuaries and methods of studying marine life in learning environment involving not only ringing diverse range of expertise, cutan to focus on the diversity, dynamic in	s in the Vancouver Island. Marine the field will be emphasized. Studer y HKU teachers and students but als ltures, and learning opportunities fr	biodiversity survey nts will be exposed to so UBC teachers and om both sides of the	
Course Learning Outcomes		sful completion of this course, students		·	
	 Explain warming ar threats for r Describe Discover 	and the basics of marine life science are the major types, causes, and effects not ocean acidification, and invasive somarine communities and ecosystem set the difference between coastal marine rethe reasons why marine biodiversity orth Pacific coastal ecosystems.	of marine threats such as pollution species, as well as describe the concrvices. e biodiversity and harbors in Hong K	ong and Canada.	
Pre-requisites (and Co-requisites and Impermissible combination)		re expected to have passed at least ill need to pass an interview in order to		2 science courses.	
Offer in 2014 - 2015	Y Sum	mer	Examination	Summer	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate through knowledge in basics biodiversity in sub-tropical Hong Kong is differ organisms have adapted to their particular envoloriginal thought, to examine reasons why the society. Independent critique on how human will affect marine life, its diversity and their economics.	rent from the North Pacific coastal areas. Abi vironments. Showing strong abilities, and logic ne diversity of marine life and their habitats a induced threats such as climate change, poll	lity to explain how marine cal thinking, with evidence are so important to human	
	B Clear understanding of the basics of marine science. Ability to explain how marine organisms have adapted to their particular environments. Knowing the common views on the reasons why the diversity of marine life and their habitats are so important to human society. Knowing the common views on how human induced threats such as climate change, pollution and habitat change will affect marine life, its diversity and their ecosystem services.				
	C Demonstrate partial and limited command of knowledge and understanding of the basics of marine science, biodiversity and coastal ecosystem services. Develop little ability to explain how marine organisms have adapted to their particular environments. Knowing the common views on the reasons why the diversity of marine life and their habitats are so important to human society. Knowing the common views on how human induced threats such as climate change, pollution and habitat change will affect marine life, its diversity and their ecosystem services.				
	D Knowing some of the basics of marine science. Developing ability to explain how marine organisms have adapted to their particular environments.				
	Fail	Fail to follow the basics of marine science environments.	e and/or how marine organisms have ada	apted to their particular	
Course Type	Field camp	s			
Course Teaching & Learning Activities	Activities		Details	No. of Hours	
a Learning Activities	Lectures		10 sessions x 2.5 hours	25	
	Field work		Field observation and work: about 5 to 6 field study	36	
			Group discussion / Project: 1 group project with presentation	10	
	Reading /	Self study		70	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignmen	nts	Group project work (30-mins presentation)	25	
	Report		2-hour written examination	50	
	Test		Field observation (group activities & reports)	25	
Required/recommended reading and online materials	Reference	reading materials will be put on Moodle	Э.		
Course Website	http://www.	scifac.hku.hk/news/bsc/ubc-summer-c	ourse		
Additional Course Information	institution () This course Enrolment	e: Students have to cover their own prices to be announced). e will be offered subject to a minimum of this course is not conducted via the y the Faculty after approval has been of	enrollment number and availability of online course selection system. Stu	teachers. dents will be enrolled	

STAT1600 Statistics: ideas	s and conce	epts (6 credits)		Academic Year	2014
Offering Department	Statistics 8	Actuarial Science		Quota	
Course Co-ordinator	Prof W K L	i, Statistics & Actuarial Science (hrntlwk	@hku.hk)		
Teachers Involved	Dr Y K Chu Dr K P Wa	, Statistics & Actuarial Science ing, Statistics & Actuarial Science t, Statistics & Actuarial Science i, Statistics & Actuarial Science			
Course Objectives	Risk Mana spectrum	The course aims at providing a broad overview of statistics for students who aspire to major in Statistics or Risk Management. It focuses on the roles of statistics as a scientific tool with applications to a wide spectrum of disciplines, and as a science of reasoning which has revolutionized modern intellectual endeavours. It lays a panoramic foundation for a formal study of statistics at the university level.			
Course Contents & Topics	Data presProbabilitInference	 Data collection: observational studies versus designed experiments Data presentation: tables; graphs; frequency distributions; correlations; trends Probability: randomness; probability models; distributions; measures of central tendency and dispersion Inference: estimation; tests of significance and hypotheses; confidence intervals; regression; prediction Further issues: controversies; misuse of statistics; ethics. 			
Course Learning Outcomes	 Understa Present Acquire Distingu 	On successful completion of this course, students should be able to: 1. Understand the role of statistics as a tool for scientific reasoning. 2. Present data in a useful and informative way. 3. Acquire basic concepts and perspectives of statistical modelling and inference. 4. Distinguish between good and bad statistical practices. 5. Pursue a major study in Statistics or Risk Management with a well-established conceptual foundation.			
Pre-requisites (and Co-requisites and Impermissible combination)	NIL				
Offer in 2014 - 2015	Y 1st s	sem 2nd sem		Examination	Dec May
Offer in 2015 - 2016	Υ	Υ			
Course Grade	A+ to F				
Grade Descriptors	A	course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.			
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.			
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course lear outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilit Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational presentational skills.			I and critical abilities.
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to appl knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture-ba	sed course			
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading / Self study				100
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Assignments		Coursework (assign test(s) and project(s		60
	Examinati	on	One 2-hour written	examination	40
Required/recommended reading and online materials	Utts, J.M. (2014). Seeing Through Statistics (4th edition). Cengage Learning. Heckard, R.F. and Utts, J.M. (2012). Statistics (International edition, 4th edition). Cengage Learning. Albright, S. C., Winston, W. L. and Zappe, C. J. (2009). Data Analysis and Decision Making with Microsoft Excel. Cengage Learning. Moore, D. S. and Notz, W. I. (2006). Statistics: Concepts and Controversies. Freeman: New York.				
Course Website	moodle.hk	ı.hk			

STAT1601 Elementary statistical methods (6 credits)		Academic Year	2014			
Offering Department	Statistics & Actuarial Science					
Course Co-ordinator	Mrs G M Jing, Statistics & Actuarial Science (gmjing@saas.hku.hk)					
Teachers Involved	Mrs G M Jing, Statistics & Actuarial Science	Mrs G M Jing, Statistics & Actuarial Science				
Course Objectives	Research findings are usually supported by data. Data collected in an experiment/survey are often concerned with situations involving variability and uncertainty. They are used to estimate the true value of					

	data are th statistical n	uantity or to test the acceptability of a us essential to any successful investi nethods widely used by researchers. Nere is no demand of sophisticated tec	gation. The course aims to presen dicrosoft Excel might be used to car	t the fundamentals of	
Course Contents & Topics	The course will introduce and study the following topics: Presentation of data, Measures of Central Tendency, Measures of Variability and Uncertainty, Basic Probability Laws, Common Probability Distributions such as Uniform, Binomial, Poisson, Hyper-geometric, Geometric and Normal distributions, Random Sampling, Distribution of the Mean, Normal Sampling Theorem, Point Estimation, Confidence Intervals, Sample Size Determination, Hypothesis Testing, Inferences for Mean and Proportion, Chi-squared tests, Simple Regression and Correlation				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Select and use appropriate statistical methods to analyze data. 2. Perform statistical analysis with calculator and Microsoft Excel. 3. Understand and apply basic concepts of probability. 4. Gain familiarity with the fundamental concepts of random variables. 5. Make inferences on a population based on sample data. 6. Determine the most appropriate statistical method to use for a given statistical problem. 7. Write appropriate conclusions based on the statistical results. 8. Understand the basic principles of simple linear regression and correlation and their applications to practical problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	Not for stud Not for stu Probability	Level 2 or above in HKDSE Mathematics or equivalent; and Not for students with Level 2 or above in HKDSE Mathematics Extended Module 1 or 2; and Not for students who have passed or already enrolled in any of the following courses: STAT2901 Probability and statistics: foundations of actuarial science, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics, ECON1280 Analysis of economic data			
Offer in 2014 - 2015	Y 1st s	1st sem 2nd sem Examination Dec N			
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F	A+ to F			
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems. Organization ar	ies, logical and coherent thinking. Show very	little or no ability to apply	
Course Type	Lecture-ba	sed course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading /	Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignme	nts	Coursework (assignments, tutorials, and a class test)	25	
	Examination		One 2-hour written examination	75	
Required/recommended reading and online materials	Chiu W. K.: Basic Statistics (Pearson (Asia), 2007) Larson, R. & Farber, B.: Elementary Statistics, Picturing the World (Prentice Hall, 2008, 4th ed.) Berk, K.N. & Carey, P.: Data Analysis with Microsoft EXCEL (Duxbury press, Update Office 2007) Freund, J. E. & Perles, B. M.: Statistics - A First Course (Prentice Hall, 2004, 8th ed.)				
Course Website	moodle.hku	ı.hk			
Additional Course Information		CASIO fx-50FH (This model has SD-Nry suitable for this course.)	MODE, REG-MODE, nCr and Norma	al Probability Function	

STAT1602 Business st	Academic Year	2014				
Offering Department	Statistics & Actuarial Science Quota					
Course Co-ordinator	Dr R W L Wong, Statistics & Actuarial Science (rwong@hku.hk)	Dr R W L Wong, Statistics & Actuarial Science (rwong@hku.hk)				
Teachers Involved	Dr R W L Wong, Statistics & Actuarial Science	Dr R W L Wong, Statistics & Actuarial Science				
Course Objectives	The discipline of statistics is concerned with situations involving uncertainty and variability. Variability greatly affects the interpretation of data. Thus statistics forms an important descriptive and analytical tool. This elementary course, which is taught without much technical mathematics, presents many					

Course Website	moodle.hk	u.hk				
Required/recommended reading and online materials	Freund, J. Berk, K.N.	Gerald Keller: Managerial Statistics (Cengage Learning, 2009, 8th edition) Freund, J. E. & Perles, B. M.: Modern Elementary Statistics (Prentice Hall, 2006, 12th ed.) Berk, K.N. & Carey, P.: Data Analysis with Microsoft EXCEL (Duxbury press, Update Office 2007) Bowerman, B.L. & O'Connell, E.S.: Business Statistics in Practice (McGraw-Hill International Edition, 2008,				
	Examinati	on	One 2-hour written example of the control of the co	,	75	
	Assignments		Coursework (assign tutorials, and a class te	ments,	25	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Reading /	Self study			100	
	Tutorials				12	
& Learning Activities	Lectures				36	
Course Teaching	Activities		Details		No. of Hours	
Course Type	Lecture-ba	sed course				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
Course Grade	A+ to F					
Offer in 2015 - 2016	Υ					
Offer in 2014 - 2015	Y 1st s	sem 2nd sem	Exa	amination	Dec May	
Pre-requisites and Co-requisites and mpermissible combination)	Elementary STAT2901 data	udents who have passed or alrea y statistical methods, STAT2601 Pr Probability and statistics: foundation se is exclusive for School of Busines	robability and statistics I, Sons of actuarial science, E	TAT1603 Intro	ductory statistics	
	3. Draw co 4. Underst 5. Gain fan 6. Make in 7. Determi 8. Gain fa problems. 9. Underst practical pr	nclusions from data using numerical and and apply basic concepts of pro niliarity with the fundamental concept ferences on a population based on she the most appropriate statistical miliarity with the fundamental concept and the basic principles of simple roblems in today's society.	summaries. bability. ts of random variables. ample data. ethod to use for a given sta cepts of statistical inference	e as they app	ly to a variety of	
Course Learning Outcomes	1. Understa	sful completion of this course, stude and the methods for describing sets statistical analysis with calculator ar	of data.			
Course Contents & Topics	Tendency, Distribution Normal Sa Hypothesis Regression	The course will introduce and discuss the following topics: Presentation of Data, Measures of Central Tendency, Measures of Variability and Uncertainty, Elementary Probability Rules and Basic Probability Distributions such as Binomial, Normal, Poisson, Hyper-geometric and Geometric, Random Sampling, the Normal Sampling Theorem, Point Estimation, Confidence Intervals and Sample Size Determination, Hypothesis Testing involving Inferences for Means and Proportions as well as the Chi-square tests, Simple Regression and Correlation, Elementary Time Series and Index Numbers				
	statistical statistical a	•	ented. Microsoft Excel mig	ht be used to	carry out some	

STAT1603 Introductory statistics (6 credits)		Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota		
Course Co-ordinator	Dr E K F Lam, Statistics & Actuarial Science (hrntlkf@hku.hk)			
Teachers Involved	Dr E K F Lam, Statistics & Actuarial Science			
Course Objectives	The discipline of statistics is concerned with situations involving uncertainty and variability. The interpretation of data needs special techniques when variability plays a role, as it usually does. Thus			

	a mathema	atistics forms an important descriptive and analytical tool of many scientific disciplines. Candidates with mathematical background will find this course suitable, because the language of mathematics allows the ubject of statistics to be presented with economy and clarity.				
Course Contents & Topics	Basic Pro Samples,	esentation of data, Variability and Uncertainty, Measures of Central Tendency, Measures of Dispersion, sic Probability Theory and Techniques, Random Variables and Probability Distributions, Random mples, Point Estimation, Normal Sampling Theorem, Confidence Intervals, Hypotheses Testing, Simple lear Regression and Correlation.				
Course Learning Outcomes	On succes	ssful completion of this course, student	s should be able to:			
	2. Make us 3. Know h population 4. Use line	. Compute different measures of central tendency and dispersion. . Make use of the basic probability theory and techniques to solve practical problem. . Know how to construct confidence intervals and use hypotheses testing to carry out inference on the opulation. . Use linear regression and correlation methods to solve problems in science and in social and business nvironment.				
Pre-requisites (and Co-requisites and Impermissible combination)	(Pass in M Not for stu STAT1601	evel 2 or above in HKDSE Mathematics Extended Module 1 or 2 or equivalent) or cass in MATH1011 University Mathematics I, or already enrolled in this course); and ot for students who have passed or already enrolled in any of these courses: TAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and atistics I, STAT2901 Probability and statistics: foundations of actuarial science				
Offer in 2014 - 2015	Y 1st	sem	Examinat	ion	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abil knowledge to solve problems. Organization a	ities, logical and coherent thinking. Show	very little	or no ability to apply	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		eighting in final ourse grade (%)	
	Assignme	ents	Coursework (assignments, tutorials, and a class test)		25	
	Examinat	ion	One 2-hour written examination	n	75	
Required/recommended reading and online materials	Jersey, 20 Larson, R. Bluman, A 5th edition	and Miller, M.: John E. Freund's Math 104, 7th edition) and Farber, B.: Elementary Statistics G.: Elementary Statistics - A Step by) F.: Elementary Statistics (Addiso Wesl	- Picturing the World (Prentice Hars Step Approach (The McGraw-H	all, 2006 ill Comp	, 3rd edition)	
Course Website	moodle.hk	u.hk				
Additional Course Information	course. Other refe Wonnacot	noodle.hku.hk Students who intend to major in "Risk Management" or "Statistics" should take STAT2601 instead of this ourse. Other references: Vonnacott, T. H. and Wonnacott, R. J.: Introductory Statistics (Wiley, New York, 1972, 2nd edition) Othor, W. J. and Massey, Jr, F. J.: Introduction to Statistical Analysis (McGraw Hill, 1983, 4th edition)				

STAT2601 Probability a	and statistics I (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science Quota				
Course Co-ordinator	Dr Y K Chung, Statistics & Actuarial Science (yukchung@hku.hk)				
Teachers Involved	Dr K P Wat (Course coordinator of 1st sem), Statistics & Actuarial Science Dr Y K Chung (Course coordinator of 2nd sem), Statistics & Actuarial Science				
Course Objectives	The discipline of statistics is concerned with situations in which uncertainty and variability play an essential role and forms an important descriptive and analytical tool in many practical problems. Against a				

		nd of motivating problems this cour ertainty and variability.	se develops relevant pro	bability models fo	or the description of	
Course Contents & Topics	Independe (pmf); Ber distribution Functions Functions	Sample spaces; Operations of events; Probability and probability laws; Conditional probability; Independence; Discrete random variables; Cumulative distribution function (cdf); Probability mass function (pmf); Bernoulli, binomial, geometric, and Poisson distributions; Continuous random variables; Cumulative distribution function (cdf); Probability density function (pdf); Exponential, Gamma, and normal distributions; Functions of a random variable; Joint distributions; Marginal distributions; Independent random variables; Functions of jointly distributed random variables; Expected value; Variance and standard deviation; Covariance and correlation.				
Course Learning Outcomes	On succes	ssful completion of this course, stud	lents should be able to:			
	2. Gain so 3. Solve re	tand the basic concepts in probabili ome insights to statistics and inferen- eal-world problem by using probabil their further studies in statistics.	ice.			
Pre-requisites (and Co-requisites and Impermissible combination)	students a Pass in M 2013 or be Pass in M and statist Not for stu Not for stu or already	Pass in MATH2014 Multivariable calculus and linear algebra, or already enrolled in this course, full tradents admitted in 2014 or thereafter; or Pass in MATH1013 University mathematics II, or already enrolled in this course, for students admitted 2013 or before; or Pass in MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probabilished statistics, for students admitted in 2013 or before; and Not for students who have passed in STAT1603 Introductory statistics, or already enrolled in this course Not for students who have passed in STAT2901 Probability and statistics: foundations of actuarial scient or already enrolled in this course; and Not for BSc(ActuarSc) students.				
Offer in 2014 - 2015	Y 1st	sem 2nd sem		Examination	Dec May	
Offer in 2015 - 2016	Υ				'	
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	·	Details		Weighting in final course grade (%)	
	Assignments		`	ssignments,	25	
	Assignme	ents	tutorials, and class	test(s))	23	
	Assignme Examinat		One 2-hour written	. ,,	75	
Required/recommended reading and online materials	Examinat DeGroot, Sheldon, I Miller, I. a Prentice H Hogg, R.\ Prentice H		One 2-hour written ty and Statistics (Boston oper Saddle River: Prenti athematical Statistics wi Introduction to Mathema	examination : Addison-Wesley, ce Hall, 2010, 8th th Applications (U	, 2012, 4th ed.) ed.) pper Saddle River: pper Saddle River:	

STAT2602 Probability and statistics II (6 credits)		Academic Year	2014	
Offering Department	Statistics & Actuarial Science Quota			
Course Co-ordinator	Dr Y K Chung, Statistics & Actuarial Science (yukchung@hku.hk)			
Teachers Involved	Dr K S Chong, Statistics & Actuarial Science Dr Y K Chung, Statistics & Actuarial Science			
Course Objectives	This course builds on STAT2601, introducing further the concepts and methods of statistics. Emphasis is			

	statistical r	on the two major areas of statistical analysis: estimation and hypothesis testing. Through the disciplines of statistical modelling, inference and decision making, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of real-life data.				
Course Contents & Topics	1. Overview: random sample; sampling distributions of statistics; moment generating function; large-sample theory: laws of large numbers and Central Limit Theorem; likelihood; sufficiency; factorisation criterion; 2. Estimation: estimator; bias; mean squared error; standard error; consistency; Fisher information; Cramer-Rao Lower Bound; efficiency; method of moments; maximum likelihood estimator; 3. Hypothesis testing: types of hypotheses; test statistics; p-value; size; power; likelihood ratio test; Neyman-Pearson Lemma; generalized likelihood ratio test; Pearson chi-squared test; Wald tests; 4. Confidence interval: confidence level; confidence limits; equal-tailed interval; construction based on hypothesis tests.					
Course Learning Outcomes	1. Apprehe 2. Relate a 3. Conduct	On successful completion of this course, students should be able to: 1. Apprehend the objectives of statistics and its relation to probability theory. 2. Relate a real-life problem to a formal framework for statistical inference. 3. Conduct standard parametric statistical inference by means of estimation and hypothesis testing.				
Pre-requisites (and Co-requisites and Impermissible combination)		the general applicability of statistics in AT2601 Probability and statistics I	a broad range of subject areas.			
Offer in 2014 - 2015	Y 1st s	1st sem 2nd sem Examination Dec Ma				
Offer in 2015 - 2016	Y	13t 36th 2th 36th		Doo may		
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading /	Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	nts	Coursework (assignments, tutorials and a class test)	25		
	Examinati	on	One 2-hour written examination	75		
Required/recommended reading and online materials	Bickel, P.J Hall: Uppe Hogg, R.V Miller, I. &	. & Lindgren, B.W. (1996). Statistics: T . & Doksum, K.A. (2001). Mathematic r Saddle River, N.J. . & Craig, A.T. (1989). Introduction to M Miller, M. (2004). John E. Freund's Mar r Saddle River.	cal Statistics: Basic Ideas and Selection Mathematical Statistics. Macmillan: N	ew York.		
Course Website	moodle.hk					

STAT2603 Data managem	nent with SAS (6 credits)	Academic Year	2014			
Offering Department	Statistics & Actuarial Science Quota					
Course Co-ordinator	Dr C W Kwan, Statistics & Actuarial Science (cwkwan@hku.hk)	Dr C W Kwan, Statistics & Actuarial Science (cwkwan@hku.hk)				
Teachers Involved	Dr G C S Lui (Course coordinator of 1st sem), Statistics & Actuarial Science Dr C W Kwan (Course coordinator of 2nd sem), Statistics & Actuarial Science					
Course Objectives	This course is designed for students who want to learn a statistical software (SAS) for data manageme and elementary data analysis. This course focuses on using SAS to manage data set input and output work with different data types, manipulate and transform data, perform random sampling and description data analysis, and create summary reports and graphics.					
Course Contents & Topics	Data management system for statistical projects. Data validation programming topics, including the following: Data set input and					

		ata manipulation. Data transformation zation, presentation and graphics. Basi				
Course Learning Outcomes	1. Access 2. Use Di 3. Summ. 4. Work v 5. Perforr 6. Perforr - work wit - restruct - subset a - produce - produce	essful completion of this course, students online help and document. The state of t	REQ, and PROC UNIVARIATE. coles and functions in Data Step. ROC TRANSPOSE PROC APPEND JLATE			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	STAT1600 Statistics: ideas and concept	s, or already enrolled in this course			
Offer in 2014 - 2015	Y 1st	st sem 2nd sem Examination De		Dec May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	outcomes. Lack of analytical and critical abil	and of knowledge and skills required for atta ities, logical and coherent thinking. Show very and presentational skills are minimally effective	/ little or no ability to apply		
Course Type	Lecture-b	pased course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures	8		36		
	Tutorials	8		12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods	s	Details	Weighting in final course grade (%)		
	Assignments		Coursework (assignments, tutorials, and class test(s))	40		
	Examina	ation	One 2-hour written examination	60		
Required/recommended reading and online materials	SAS: SAS Bailer, J.: Delwiche Cody, R. 2nd editio	Cody, R.P.: Learning SAS by Example: A Programmer's Guide (North Carolina: SAS Institute Inc., 2007) SAS: SAS Certification Prep Guide: Base Programming for SAS 9. Third Edition. (SAS Institute Inc., 2011) Bailer, J.: Statistical Programming in SAS. North Carolina: (SAS Institute Inc., 2010) Delwiche, L. and Slaughter, S.: The Little SAS Book: A Primer. Fourth Edition. (SAS Institute Inc, 2008) Cody, R. P.: Cody's Data Cleaning Techniques Using SAS System (North Carolina: SAS Institute, 2008, 2nd edition)				
	-	SAS: Step by Step Programming with Base SAS Software (North Carolina: SAS Publishing, 2001) moodle.hku.hk				

STAT2605 Demographic a	and socio-economic statistics (6 credits)	Academic Year	2014			
Offering Department	Statistics & Actuarial Science Quota					
Course Co-ordinator	Ms L M S Kwan, Statistics & Actuarial Science (lucykwan@hku.hk)				
Teachers Involved	Ms L M S Kwan, Statistics & Actuarial Science					
Course Objectives	The course covers the major methods for studying demograph provide quantitative information on the essential aspects of the liv aims to provide students with 1) basic knowledge including the methods and statistical indicators; and 2) skills in the statistic interpretation and application to planning, policy-making and common the course of the course	res of citizens in a terri e underlying principles al descriptions of a t	tory. The cours			
Course Contents & Topics	Population structure, fertility, mortality, migration, life tables, popul Social statistics on health, housing, labour, and social inequality; Economic statistics on GDP and green GDP, prices;	ation projections;				

		heory and methods of official statistics would be especially drawn from Hong			
Course Learning Outcomes	On successful completion of this course, students should be able to:				
	territory. 2. Further Hong Kon 3. Predict	Describe and interpret major official & other publicly disseminated socio-economic statistics of a territory. Further appraise and analyse the socio-economic well-being of a territory with particular reference to Hong Kong and mainland China. Predict a future situation by assimilating and deriving from appropriate statistics. Critically assess statistics reporting.			
Pre-requisites (and Co-requisites and Impermissible combination)	or 2 or equal Pass in conomic Probability	(Level 2 or above in HKDSE Mathematics or Level 2 or above in HKDSE Mathematics Exended Module 1 or 2 or equvialent); and Pass in or already enrolled in any of these courses: BIOL2102 Biostatistics, ECON1280 Analysis of economic data, STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics, STAT2901 Probability and statistics: foundations of actuarial science			
Offer in 2014 - 2015	Y 2nd	sem	Examination	May	
Offer in 2015 - 2016	Y		'	'	
Course Grade	A+ to F				
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.			
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.			
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	S	Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignments		Coursework (assignments, tutorials and a test)	25	
	Examinat	ion	One 2-hour written examination	75	
Required/recommended reading and online materials	Pollard A.	gest of Statistics (Census & Statistics I H., Yusuf F., & Pollard G. N.: Demogra i E.: Understanding Economic Statistic	aphic Techniques (Pergamon Press,	1990, 3rd edition)	
Course Website	moodle.hk	au hk			

STAT2901 Probability and credits)	I statistics: foundations of actuarial science (6	Academic Year	2014		
Offering Department	Statistics & Actuarial Science	Quota			
Course Co-ordinator	Dr Y K Chung, Statistics & Actuarial Science (yukchung@hku.	hk)			
Teachers Involved	Dr Y K Chung, Statistics & Actuarial Science				
Course Objectives	The purpose of this course is to develop knowledge of the fundamental tools in probability and statistics fo quantitatively assessing risk. Applications of these tools to actuarial science problems will be emphasized Students will have a thorough command of probability topics and the supporting calculations.				
Course Contents & Topics	Students will have a thorough command of probability topics and the supporting calculations. 1. General Probability - Basic elements of probability in set notation - Mutually exclusive events - Addition and multiplication rules - Independence of events - Combinatorial probability - Conditional probability and expectations - Bayes Theorem / Law of total probability - Random variables 2. Univariate probability distributions (including binomial, negative binomial, geometric, hypergeometric Poisson, uniform, exponential, chi-square, beta, Pareto, lognormal, gamma, Weibull and normal) and				

	CumulatingMode, meVarianceCentral L	ty functions and probability density functions we distribution functions edian, percentiles and moments and measures of dispersion imit Theorem ig distributions and introduction of estimation			
Course Learning Outcomes	Underst Develop	sful completion of this course, students should be able to: and the mathematical theory underlying the modern practice of statistics. skills in probabilistic analysis for problems involving randomness. schniques in probability and statistics to solve actuarial science problems.			
Pre-requisites (and Co-requisites and Impermissible combination)	enrolled in (for studen Not for stu	IATH1821 Mathematical methods for actuarial science I (for BSc(ActuarScient) or (Pass in MATH1013 University mathematics II or already of this course) or (Pass in MATH1013 University mathematics II or already of the unit of the BSc(ActuarSc) programme); and undents who have passed or enrolled in any of these courses: STAT1601 STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT2601 Probability and statistics II or already of the statistics II or already or all already or alre	enrolled in this course Elementary statistical		
Offer in 2014 - 2015	Y 2nd	sem Examination	May		
Offer in 2015 - 2016	Υ		·		
Course Grade	A+ to F				
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.			
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
		knowledge to most familiar studitions. Apply moderately effective organizational and present	ntational skills.		
	D	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills.	ome of the course learning ytical and critical abilities. ective organizational and		
	D Fail	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff	ome of the course learning ytical and critical abilities. ective organizational and aining the course learning y little or no ability to apply		
Course Type	Fail	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very	ome of the course learning ytical and critical abilities. ective organizational and aining the course learning y little or no ability to apply		
Course Teaching	Fail	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course	ome of the course learning vical and critical abilities. ective organizational and aining the course learning vittle or no ability to apply		
	Fail Lecture-ba	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course	ome of the course learning ytical and critical abilities. ective organizational and aining the course learning I little or no ability to apply e or ineffective.		
Course Teaching	Fail Lecture-ba	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course	ome of the course learning trical and critical abilities. ective organizational and anining the course learning tritle or no ability to apply e or ineffective.		
Course Teaching	Fail Lecture-ba Activities Lectures Tutorials	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course Details Details	ome of the course learning ytical and critical abilities. ective organizational and sining the course learning / little or no ability to apply e or ineffective.		
Course Teaching	Fail Lecture-ba Activities Lectures Tutorials	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course Details tutorials/example classes	ome of the course learning vical and critical abilities. ective organizational and aining the course learning little or no ability to apply e or ineffective. No. of Hours 36 12		
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading /	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analyshow limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective asset course Details Details Coursework (assignments)	me of the course learning ytical and critical abilities. ective organizational and sining the course learning / little or no ability to apply e or ineffective. No. of Hours 36 12 100 Weighting in final course grade (%)		
& Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course Details Details Details Coursework (assignments, tutorials, and a class test)	me of the course learning vical and critical abilities. ective organizational and aining the course learning little or no ability to apply a or ineffective. No. of Hours 12 100 Weighting in final course grade (%)		
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Assignme Examinati I. Miller & Internation M. A. Bea Engineerin S. Ghahra M. Hassett S.M. Ross	Demonstrate partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely eff presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for atta outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective used course Details Details Details Coursework (assignments, tutorials, and a class test)	when of the course learning vical and critical abilities. ective organizational and sining the course learning / little or no ability to apply e or ineffective. No. of Hours No. of Hours 100 Weighting in final course grade (%) 25 75 (Pearson Education ents, Insurance, and dition)		

STAT2902 Financial mathe	mathematics (6 credits) Academic Year 2014					
Offering Department	Statistics & Actuarial Science	tatistics & Actuarial Science Quota				
Course Co-ordinator	Prof K C Yuen, Statistics & Actuarial Science (kcyuen@hku.hk)					
Teachers Involved	Prof K C Yuen, Statistics & Actuarial Science					
Course Objectives	This course introduces the fundamental concepts of financial mathematics which plays an important role in the development of basic actuarial techniques. Practical applications of these concepts are also covered.					
Course Contents & Topics	Key topics include: measurement of interest, annuities certain; discounted cash flow analysis; yield rates amortization schedules and sinking funds; bonds and related securities; practical applications such as rea estate mortgage and short sales; stochastic approaches to interest; and key terms of financial analysis such as yield curves, spot rates, forward rates, duration, convexity, and immunization.					
Course Learning Outcomes	On successful completion of this course, students should be able to:					

	2. Learn s 3. Do sim 4. Learn t short sale 5. Quote i	es, and so on.	ariety of annuities. Ising basic annuities. Pencountered financial instruments such Irmine interest rate based on a series of fi			
Pre-requisites (and Co-requisites and Impermissible combination)	course; a	nd udents who have passed in STAT:	s: foundations of actuarial science or al 3615 Practical mathematics for investme	,		
Offer in 2014 - 2015	Y 2nd	d sem	Examination	May		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origin thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply high effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critical	ommand of knowledge and skills required for atta il abilities, logical and coherent thinking. Show ven tion and presentational skills are minimally effective	little or no ability to apply		
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	es	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials		tutorials/example classes	12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods	5	Details	Weighting in final course grade (%)		
	Assignm	ents	Coursework (assignments, tutorials, and class test(s))	25		
	Examina	ition	One 3-hour written examination	75		
Required/recommended reading and online materials	Broverma	S. G.: The Theory of Interest (Irwin an, S. A.: Mathematics of Investicut, 2004, 3rd edition)	: Illinois, 2008, 3rd edition) ment and Credit (ACTEX Publications	- Mad River Books:		

STAT3600 Linear statistic	al analysis (6 credits)	Academic Year	2014
Offering Department	Statistics & Actuarial Science	Quota	
Course Co-ordinator	Prof S M S Lee, Statistics & Actuarial Science (smslee@hku.hk)		
Teachers Involved	Prof T W K Fung, Statistics & Actuarial Science Prof S M S Lee, Statistics & Actuarial Science		
Course Objectives	The analysis of variability is mainly concerned with locating the stechniques investigate these sources through the use of 'linear' and practice of these models.		
Course Contents & Topics	 Simple linear regression: least squares method, analysis of hypothesis tests and confidence intervals for regression paramete (2) Multiple linear regression: least squares method, analysis of reduced vs full models, hypothesis tests and confidence interval polynomial regression. One-way classification models: one-way ANOVA, analysis of (4) Two-way classification models: interactions, two-way ANOVA treatment effects, contrasts, randomised complete block design. Universal approach to linear modelling: dummy variables, 'mone-way and two-way (unbalanced) models, ANCOVA models, or (6) Regression diagnostics: leverage, residual plot, normal probinfluential observation, Cook's distance, multicollinearity, model treatment of the confidence intervals. 	ers, prediction. of variance, coefficient als for regression parar reatment effects, contra- for balanced data stru ultiple linear regression oncomitant variables. pability plot, outlier, stu	of determination, neters, prediction, asts. ctures, analysis of
Course Learning Outcomes	On successful completion of the course, students should be able 1. Understand linear regression model with one or multiple indepe 2. Understand ANOVA models for one and two factors. 3. Understand general linear model with categorical and continuo	endent variables.	98.

Pre-requisites (and Co-requisites and Impermissible combination)	Not for s	Pass in STAT2602 Probability and statistics II; and Not for students who have passed in STAT3907 Linear models and forecasting, or have already enrolled in this course.				
Offer in 2014 - 2015	Y 1s	t sem 2nd sem	Examination	Dec May		
Offer in 2015 - 2016	Υ		<u>'</u>	'		
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origina thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learnin outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critical	mmand of knowledge and skills required for at abilities, logical and coherent thinking. Show ver ion and presentational skills are minimally effective	y little or no ability to apply		
Course Type	Lecture-b	pased course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures	S		36		
	Tutorials	S		12		
	Reading	g / Self study		100		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignm	nents	Coursework (assignments, tutorials and a test)	25		
	Examina	ation	One 2-hour written examination	75		
Required/recommended reading and online materials	(McGraw Berry, D. Draper, N Krzanow	Michael H Kutner, Christopher J. Nachtsheim, John Neter, William Li: Applied Linear Statistical Models (McGraw-Hill/Irwin; 5th edition) Berry, D. A. & Lindgren, B. W.: Statistics: Theory and Methods (Duxbury Belmont, 1996) Draper, N. R. & Smith, H.: Applied Regression Analysis (Wiley, New York, 1998) Krzanowski, W. J.: An Introduction to Statistical Modelling (Arnold, London, 1998) Montgomery, D. C. & Peck, E. A.: Introduction to Linear Regression Analysis (Wiley, New York, 1992)				
Course Website	moodle.h	nku.hk				

STAT3602 Statistical infere	nce (6 credits)		Academic Year	2014
Offering Department	Statistics & Actuarial Science		Quota	
Course Co-ordinator	Prof S M S Lee, Statistics & Actuarial Science (smslee@hl	ku.hk)		
Teachers Involved	Prof S M S Lee, Statistics & Actuarial Science			
Course Objectives	This course covers the advanced theory of point estesting. Using a mathematically-oriented approach, the coinferential problems, statistical methodologies and the urparticular for students intending to further their studies or to	ourse provided	des a solid and rigo oncepts and theory	rous treatment of . It is suitable in
Course Contents & Topics	Paradigms of inference: frequentist, Bayesian, Fisherian Decision theory: loss function; risk; decision rule; admiss Estimation theory: exponential families; likelihood; completeness; UMVU estimators; information inequality estimation. Hypothesis testing: uniformly most powerful test; munbiased test; maximal invariants; most powerful invariant.	sibility; mini sufficienc ; large-san onotone lik	y; minimal sufficient nple theory of max selihood ratio; unbi	ancy; ancillarity; kimum likelihood asedness; UMP
Course Learning Outcomes	On successful completion of the course, students should b 1. Form a panoramic view of classical developments in ma 2. Gain thorough insight into the essentials of statistical info 3. Build a solid foundation for future research studies in sta	thematical erence.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or STAT390	2 Statistica	l models	
Offer in 2014 - 2015	Y 1st sem		Examination	Dec
Offer in 2015 - 2016	Y			
Course Grade	A+ to F			
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of 6	extensive know	vledge and skills require	d for attaining all the

		course learning outcomes. Show strong and thought, and ability to apply knowledge to a effective organizational and presentational sl		
	В	the course learning outcomes. Show evider	ad range of knowledge and skills required fo ace of analytical and critical abilities and log iliar situations. Apply effective organizational	ical thinking, and ability to
	С	learning outcomes. Show evidence of some	and of knowledge and skills required for att analytical and critical abilities and logical th moderately effective organizational and prese	inking, and ability to apply
	D		knowledge and skills required for attaining sont and logical thinking, but with limited anal solve problems. Apply limited or barely ef	ytical and critical abilities.
	Fail		and of knowledge and skills required for attities, logical and coherent thinking. Show verund presentational skills are minimally effective	y little or no ability to apply
Course Type	Lecture-based course			
Course Teaching	Activitie	s	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading / Self study			100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25
	Examination		One 2-hour written examination	75
Required/recommended reading and online materials	Bickel, P. Hall, Uppe Freund, J. Hogg, R. V Pace, L. Scientific:	A. & Lindgren, B. W.: Statistics: Theory J. & Doksum, K. A.: Mathematical Stater Saddle River, N.J., 2001) B.: Mathematical Statistics (Prentice FV. & Craig, A. T.: Introduction to Mathe & Salvan, A.: Principles of Statistic Singapore, 1997) A. & Smith, R.L.: Essentials of Statistic	atistics: Basic Ideas and Selected To Hall, Englewood Cliffs, N.J., 1992) matical Statistics (Macmillan, New Y al Inference: from a neo-Fisherian	opics, Vol. 1 (Prentice York, 1989) In perspective (World
Course Website	moodle.hl	ku.hk		

STAT3603 Probability mod	delling (6 cr	redits)	Academic Year	2014		
Offering Department	Statistics 8	Actuarial Science	Quota			
Course Co-ordinator	Dr K S Cho	ong, Statistics & Actuarial Science (kschong@hku.hk)				
Teachers Involved	Dr K S Cho	ong, Statistics & Actuarial Science				
Course Objectives	This is an i	introductory course in probability modelling. A range of incussed.	mportant topics in stoo	chastic processes		
Course Contents & Topics	models, cla in transier distribution motion, the	Introduction to probability theory, conditional probability and expectation, Markov chains, random walk models, classification of states in a Markov chain, calculation of limiting probabilities and mean time spen in transient states, Poisson process, distribution of interarrival time and waiting time, conditional distribution of the arrival time, Brownian Motion, hitting time and maximum variable, geometric Brownian motion, the Black-Scholes option pricing formula, Gaussian bridge, and stationary processes. Birth-and death process, branching process and renewal process may also be covered (if time permits).				
Course Learning Outcomes	Apply th Understa	On successful completion of the course, students should be able to: 1. Apply the conditioning method to calculate the mean and probability. 2. Understand the essentials of Markov chains, the Poisson process, and Brownian motion. 3. Understand how stochastic models can be applied to the study of real-life phenomena.				
Pre-requisites (and Co-requisites and Impermissible combination)	Not for stu	AT2601 Probability and statistics I; and udents who have passed in MATH3603 Probability the due to the have passed in STAT3903 Stochastic mountains who have passed in STAT3903 Stochastic mountains.	,,			
Offer in 2014 - 2015	Y 1st s	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive king course learning outcomes. Show strong analytical and critical abiliting thought, and ability to apply knowledge to a wide range of complex effective organizational and presentational skills.	es and logical thinking, with	evidence of original		
	В	Demonstrate substantial command of a broad range of knowledge the course learning outcomes. Show evidence of analytical and cri apply knowledge to familiar and some unfamiliar situations. Apply eff	tical abilities and logical th	inking, and ability to		
	С	Demonstrate general but incomplete command of knowledge and learning outcomes. Show evidence of some analytical and critical a				

		knowledge to most familiar situations. Apply moderately effective organizational and presentation				
	D	outcomes. Show evidence of some	and of knowledge and skills required for attaining so coherent and logical thinking, but with limited anal dge to solve problems. Apply limited or barely eff	ytical and critical abilities.		
	Fail	outcomes. Lack of analytical and critic	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture-	ture-based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignments		Coursework (assignments, tutorials, and a class test)	25		
	Examination		One 2-hour written examination	75		
Required/recommended reading and online materials	S. M. Ro	oss: Introduction to Probability Mod	els (9th edition)			
Course Website	moodle.	hku.hk				

STAT3604 Design and ana	alysis of ex	periments (6 credits)	Ac	ademic Year	2014	
Offering Department	Statistics	& Actuarial Science	Qu	ota		
Course Co-ordinator	Dr G Li, S	Statistics & Actuarial Science (gdli@hku	ı.hk)			
Teachers Involved	Dr G Li, S	Statistics & Actuarial Science				
Course Objectives	introduce	research often requires proper desi the basic principles of experimental de odel-based analysis of experiment.				
Course Contents & Topics	randomis	nciples and guidelines for designing exected block, crossed and nested factorial and related designs. Fixed/random effected	structure. Balanced incon			
Course Learning Outcomes	1. Develo 2. Acquir appropria 3. Select	On successful completion of the course, students should be able to: 1. Develop a conceptual understanding of experimental design. 2. Acquire the fundamental statistical tools of experimental design and the understanding to use ther appropriately. 3. Select appropriate experimental designs for different problems. 4. Select appropriate statistical model and to know how to validate the model.				
Pre-requisites (and Co-requisites and Impermissible combination)		Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3611 Compute aided data analysis				
Offer in 2014 - 2015	Y 2n	d sem	Ex	amination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of outcomes. Show evidence of some cohere Show limited ability to apply knowledge to presentational skills.	nt and logical thinking, but wit	h limited analytical	and critical abilities.	
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abil knowledge to solve problems. Organization a	ities, logical and coherent think	ing. Show very little	or no ability to apply	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	

	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments	Coursework (assignments, tutorials, and a class test)	25
	Examination	One 2-hour written examination	75
Required/recommended reading and online materials	D. R. Cox: Planning of Experiments A. L. Edwards: Experimental Design G. A. Ferguson & Y. Takane: Statis edition) C. R. Hicks & K. V. Turner Jr.: Fun edition) P. W. M. John: Statistical Design and	ysis of Experiments (Wiley, 1997, 4th edition) (Wiley, 1958) in Psychological Research (Harper & Row, 198 stical Analysis in Psychology and Education (N damental Concepts in the Design of Experime d Analysis of Experiments (Macmillan, 1971) ess: Statistical Design and Analysis of Experime	AcGraw Hill, 1989, 6th onts (Oxford, 1999, 5th
Course Website	moodle.hku.hk		

STAT3605 Quality control	and manag	ement (6 credits)		Academic Year	2014
Offering Department	Statistics 8	Actuarial Science		Quota	
Course Co-ordinator	Dr K S Cho	ong, Statistics & Actuarial Science (kscl	nong @hku.hk)		
Teachers Involved	Dr K S Cho	ong, Statistics & Actuarial Science			
Course Objectives	prosperity. the consulting sequential total quality	essful control of quality in production. This course provides an overview of quer. It presents a variety of statistic sampling plans, reliability, and life-testing control, zero defects, six-sigma, and of today's quality control and managen	uality compromise what solutions including contemporary qualicolumn.	nich involves both g control charts, ality management	the producer and acceptance and systems such as
Course Contents & Topics	inference. curves. Sin schemes.	distributions and their applicatio Process control, variables and ngle, double and sequential sa Variables sampling. Reliability //anagement of quality control, total qua	attributes control mpling plans. MIL- and life-testing.	charts. Operating STD-105D and Elementary	characteristic Dodge-Romig experimental
Course Learning Outcomes	On succes	sful completion of the course, students	should be able to:		
	2. Understa	 Appreciate the practicality of statistical concepts and methods in general. Understand how certain specific statistical methods can benefit various production situations. Know the traditional and modern systems of quality management. 			
Pre-requisites (and Co-requisites and Impermissible combination)	course) or Business	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1600 Business statistics and any University level 2 course) or STAT2602 Probability and statistics II o (STAT1603 Introductory statistics and any University level 2 course) or STAT3902 Statistical models			
Offer in 2014 - 2015	Y 2nd	sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.			
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.			
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.			
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
		Demonstrate little or no evidence of command of knowledge and skills required for attaining the coutcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no knowledge to solve problems. Organization and presentational skills are minimally effective or ineffect.			
	Fail	outcomes. Lack of analytical and critical abilities	es, logical and coherent thi	nking. Show very little	or no ability to apply
Course Type		outcomes. Lack of analytical and critical abilities	es, logical and coherent thi	nking. Show very little	or no ability to apply
Course Teaching		outcomes. Lack of analytical and critical abilitie knowledge to solve problems. Organization and sed course	es, logical and coherent thi	nking. Show very little	or no ability to apply effective.
Course Teaching	Lecture-ba	outcomes. Lack of analytical and critical abilitie knowledge to solve problems. Organization and sed course	es, logical and coherent thi d presentational skills are r	nking. Show very little	or no ability to apply
Course Teaching	Lecture-ba Activities	outcomes. Lack of analytical and critical abilitie knowledge to solve problems. Organization and sed course	es, logical and coherent thi d presentational skills are r	nking. Show very little	or no ability to apply effective.
Course Type Course Teaching & Learning Activities	Lecture-ba Activities Lectures Tutorials	outcomes. Lack of analytical and critical abilitie knowledge to solve problems. Organization and sed course	es, logical and coherent thi d presentational skills are r	nking. Show very little	or no ability to apply effective. No. of Hours

	Assignments Examination	Coursework (assignments, tutorials, and a class test) One 2-hour written examination	25 75		
Required/recommended reading and online materials	A. J. Duncan: Quality Control and Industrial Statistics (Irwin, Homewoor, 1986, 5th edition) D. C. Montgomery: Statistical Quality Control (New York: Wiley, 1996, 3rd edition) J. Banks: Principles of Quality Control (New York: Wiley, 1989) E. L. Grant & R. S. Leavenworth: Statistical Quality Control (New York: McGraw-Hill, 1988, 6th editior I. D. Hill: An Introduction to Sampling Inspection (The Institute of Engineering Inspection Monog London, 1961) G. B. Wetherill: Sampling Inspection and Quality Control (London: Methuen, 1977, 2nd edition) A. V. Feigenbaum: Total Quality Control (New York: McGraw-Hill, 1983, 3rd edition)				
Course Website	moodle.hku.hk				

STAT3606 Business logist			Academic Ye	ar 2014		
Offering Department	Statistics	& Actuarial Science	Quota			
Course Co-ordinator	Ms O T K Choi, Statistics & Actuarial Science (ochoi@saas.hku.hk)					
Teachers Involved	Ms O T K Choi, Statistics & Actuarial Science					
Course Objectives	Modern business corporations are increasingly using logistics as a management tool, for example, in capital budgeting problems, production planning, scheduling, transportations and deciding location for a new factory. This course addresses the business applications of logistics.					
Course Contents & Topics	business	In this course, students will apply the analytical skills with aid of computer techniques in solving the business logistic problems. Topics include optimization techniques applied in allocation of resources financial planning, transportation, assignment, inventory control and queuing problems.				
Course Learning Outcomes	On successful completion of the course, students should be able to:					
	 Solve linear programming with Graphical approach, Simplex method and hands-on Excel Solving function. Set-up and solve network flow problems using least-cost approach, MODI method and Vogel's approximation. Understand decision theory and its applications. Evaluate the cost and effectiveness of service systems. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or STAT2601 Probability and statistics I or (STAT1603 Introductory statistics and any University level 2 course) or STAT2901 Probability and statistics: foundations of actuarial science; and Not for students who have passed MATH3901 Operations research I, or have already enrolled in this course.					
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours		
	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Methods	•	Details	Weighting in fina course grade (%		
	Assignments		Coursework (assignments, tutorials and a test)	25		
	Examination		One 2-hour written examination	75		

reading and online materials	Wayne L. Winston: Operations Research, 4th edition, Thomson Learning H. Taha: An Introduction to Operations Research, 8th edition, Pearson International Edition F.S. Hillier and G, J. Lieberman: An Introduction to Operations Research Robert F.V. Anderson, Holt, Rinehart and Winston: Introduction to Linear Algebra	
Course Website	moodle.hku.hk	

STAT3607 Statistics in clin credits)	nical medic	cine and bio-medical research (6		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Prof G Yir	n, Statistics & Actuarial Science (gyin@l	hku.hk)			
Teachers Involved	Prof G Yir	n, Statistics & Actuarial Science				
Course Objectives	methodolo arise from frequentis	I research, medical data are often on the clinical observational and donclinical trial designs. It involves phase that approaches, sample size and powe the course provides the necessary bid.	ecision-making proc e I, II, III and IV clin r calculation. No ki	ess. Also, statistic ical trial designs, b nowledge in biolog	al problems often both Bayesian and gy or medicine is	
Course Contents & Topics	data analy	ents of the course include contingency ysis, Bayesian designs, dose-finding me signs, hypothesis testing, adaptive desig	thods, sample size	*	, ,	
Course Learning Outcomes	On succes	ssful completion of the course, students	should be able to:			
	 Design Conduct 	tand the basic concepts in medical static clinical trials and compute sample sizes at statistical inference and apply regress nedical problems by using various statis	s. ion models.			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	TAT2602 Probability and statistics II or \$	STAT3902 Statistica	l models		
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	, :	Details		Weighting in final course grade (%)	
	Assignme	ents	Coursework (as tutorials, and a class	ssignments,	25	
	Examina	tion	One 2-hour written	examination	75	
Required/recommended reading and online materials	& Hall/CR J. Aitchisc P. Armita P. Armita D. Altman N. E. Bre control st D. R. Cox	on, J. W. Kay & I. J. Lauder: Statistical CC, 2004) on & J. Dunsmore: Statistical Prediction ge: Statistical Methods in Medical Resea ge: Sequential Medical Trials (Oxford: B i: Practical Statistics for Medical Resear slow & N. E. Day: Statistical Methods udies (Lyon: IARC, 1980) & E. J. Snell: The Analysis of Binary Da & D. V. Hinkley: Theoretical Statistics (Analysis (Cambridge arch (Oxford: Blackw lackwell, 1975, 2nd o ch (London: Chapma in Cancer Researc	e University Press, rell, 1971) edition) an & Hall, 1991) ch Volume 1 - The an and Hall, 1989,	1976) e analysis of case	
Course Website	moodle.hl	,		. ,		
		565				

Additional Course Information	Other references: E. K. Harris & A. Albert: Survivorship Analysis for Clinical Studies (New York: Marcel Dekker, 1991) B. Jones & M. G. Kenward: Design and Analysis of Cross-Over Trials (London: Chapman and Hall, 1990) B. J. T. Morgan: Analysis of Quantal Response Data (London: Chapman and Hall, 1992) S. J. Pocock: Clinical Trials. A Practical Approach (Chickess: John Wiley & Sons, 1991) P. McCullagh & J. A Nelder: Generalised Linear Models (London: Chapman and Hall, 1989, 2nd edition)	
	P. McCullagh & J. A. Nelder: Generalised Linear Models (London: Chapman and Hall, 1989, 2nd edition)	
	Additional Course Information	 E. K. Harris & A. Albert: Survivorship Analysis for Clinical Studies (New York: Marcel Dekker, 1991) B. Jones & M. G. Kenward: Design and Analysis of Cross-Over Trials (London: Chapman and Hall, 1990) B. J. T. Morgan: Analysis of Quantal Response Data (London: Chapman and Hall, 1992)

STAT3608 Statistical general	tics (6 cred	lits)		Academic Year	2014	
Offering Department	Statistics 8	& Actuarial Science		Quota		
Course Co-ordinator	Prof T W k	KFung, Statistics & Actuarial Science ((wingfung@hku.hk)			
Teachers Involved	Prof T W k	K Fung, Statistics & Actuarial Science				
Course Objectives	identification	se aims to provide students with a on and genetic epidemiology in gene re applied to solve forensic DNA and g	e mapping and to un			
Course Contents & Topics	Weinberg probability gene map	se will cover the following topics: equilibrium; linkage equilibrium; ch ; paternity testing and kinship analys ping; parametric linkage analysis; r n designs; case-control analysis; family	i-square test; likelih sis; DNA mixed stain non-parametric linkag	ood ratio test; e n; relatedness; po ge analysis; linkaç	xact test; match pulation structure; ge disequilibrium;	
Course Learning Outcomes	On succes	sful completion of the course, students	s should be able to:			
	Know th mapping.	and the fundamental principles in static e usefulness and possible limitations of statistical solutions to specific problem	of statistical methodol			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in ST	FAT2602 Probability and statistics II or	STAT3902 Statistical	models		
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attain course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. A effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	.	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading /	Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents	Coursework (as tutorials, and a class	signments,	25	
	Examinat	ion	One 2-hour written	examination	75	
Required/recommended reading and online materials	Ott, J.: Ana Ziegler, A. Evett, I. W	s. and Cummings, M. R.: Essentials of alysis of Human Genetic Linkage (The and Konig, I.R.: A Statistical Approach . and Weir, B. S.: Interpreting DNA Evi K. and Hu, Y. Q.: Statistical DNA Fore	Johns Hopkins Univento Genetic Epidemic idence (Sinauer Asso	ersity Press, 1999, blogy (Wiley-VCH, ciates, Inc. Publish	2006) ners, 1998)	
	2000)					

STAT3609 The statistics of	investment risk (6 credits)	Academic Year	2014
Offering Department	Statistics & Actuarial Science	Quota	

Course Co-ordinator		at, Statistics & Actuarial Science (watkp	Jeinu.iik)			
Teachers Involved	Dr K P Wa	at, Statistics & Actuarial Science				
Course Objectives	uncertaint provide a markets fo	stments involve some risk. The decision y. Whilst prediction of the future is contained framework for investment decipation framework for investment decipation in the state of the prevailing states and current states.	difficult, there are statistical modell isions, particularly those relating to rencies. Building upon research, bo	ing techniques which stock markets and the oth in Hong Kong and		
Course Contents & Topics		of market efficiency, mean-variance por rtfolio performance and management, l		odel, arbitrage pricing		
Course Learning Outcomes	1. Measur 2. Apply d 3. Explain 4. Explain	e risk and return of portfolios. ifferent approaches in constructing opti and apply asset pricing models and ev the concepts of market efficiency and arket efficiency.	imal investment portfolios. valuate investment performance.	es to assess different		
Pre-requisites (and Co-requisites and Impermissible combination)	level 2 cou Not for st enrolled in	TAT2602 Probability and statistics II urse) or STAT3611 Computer-aided da udents who have passed in FINA23 hithis course; and ic(Actuarial Science) students	ta analysis or STAT3614 Business f	orecasting; and		
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origina thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abili knowledge to solve problems. Organization a	ties, logical and coherent thinking. Show very	y little or no ability to apply		
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	ents	Coursework (assignments, tutorials and class test(s))	30		
	Examinat	ion	One 2-hour written examination	70		
Required/recommended reading and online materials	McGraw-Felton, E. Investmer Luenberg Defusco, I CFA Instit Fabozzi, I CAPM to Ruppert, I Young, L.	Kane, A., and Marcus, A. J. (2011) iill. J., Gruber, M. J., Brown, S. J., and Out Analysis (8th Edition). John Wiley. er, D. G. (2009). Investment Science (In R. A., McLeavey, D. W., Pinto, J. E., aute Investment Series (2nd Edition). New Jersey: Wiley. O. (2004). Statistics and Finance: An In S. F. and Chiang, R. C. P. (1997). The of Hong Kong.	Goetzmann, W. N. (2011). Modern nternational Edition). Oxford Univers and Runkle D. E. (2007). Quantitative by Jersey: Wiley. (2006). Financial Modelling of the troduction. New York: Springer.	Portfolio Theory and ity Press. e Investment Analysis, Equity Market: From		
Course Website	moodle.hk					

STAT3610 Risk manage	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota	
Course Co-ordinator	Dr R W L Wong, Statistics & Actuarial Science (rwong@hku.hk	r)	
Teachers Involved	Dr R W L Wong, Statistics & Actuarial Science		

Activities Lectures Tutorials Reading / Methods Assignme Examinati	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abknowledge to solve problems. Organization ased course Self study E.: Principles of Risk Management arinn, J., Hoyt, R. E. and Sommer, D.	nand of knowledge and skills required for atta ilities, logical and coherent thinking. Show very and presentational skills are minimally effective Details	No. of Hours No. of Hours No. of Hours 100 Weighting in final course grade (%) 25 75 xy, 10th edition)		
Lecture-ba Activities Lectures Tutorials Reading / Methods Assignment	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abknowledge to solve problems. Organization ased course Self study	Details Coursework (assignments, tutorials, and a class test)	No. of Hours No. of Hours 12 100 Weighting in final course grade (%)		
Lecture-ba Activities Lectures Tutorials Reading / Methods	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abknowledge to solve problems. Organization assed course Self study	Details Details Coursework (assignments,	No. of Hours No. of Hours 100 No. of Hours No. of Hours Weighting in final course grade (%)		
Lecture-ba Activities Lectures Tutorials Reading /	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abknowledge to solve problems. Organization ased course	ilities, logical and coherent thinking. Show very and presentational skills are minimally effective Details	ining the course learning little or no ability to apply or ineffective. No. of Hours 36 12 100 Weighting in final		
Lecture-ba Activities Lectures Tutorials	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab knowledge to solve problems. Organization ased course	ilities, logical and coherent thinking. Show very and presentational skills are minimally effective	ining the course learning little or no ability to apply or ineffective. No. of Hours 36		
Lecture-ba Activities Lectures	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab knowledge to solve problems. Organization ased course	ilities, logical and coherent thinking. Show very and presentational skills are minimally effective	ining the course learning little or no ability to apply or ineffective. No. of Hours		
Lecture-ba	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab knowledge to solve problems. Organization ased course	ilities, logical and coherent thinking. Show very and presentational skills are minimally effective	little or no ability to apply or ineffective.		
Lecture-ba	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab knowledge to solve problems. Organization ased course	ilities, logical and coherent thinking. Show very and presentational skills are minimally effective	nining the course learning little or no ability to apply or ineffective.		
	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab knowledge to solve problems. Organization	ilities, logical and coherent thinking. Show very	nining the course learning little or no ability to apply		
Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical ab	ilities, logical and coherent thinking. Show very	nining the course learning little or no ability to apply		
	presentational skills.		oonvo organizational and		
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
A+ to F					
Υ					
Y 2nd	sem	Examination	May		
course) or Business (STAT160: statistics: f	(STAT1601 Elementary statistical n statistics and any University level 3 Introductory statistics and any U foundations of actuarial science.	nethods and any University level 2 co 2 course) or STAT2601 Probability	ourse) or (STAT1602 and statistics I or		
principle. 2. Demoninsurance 3. Underst 4. Compar 5. Plan for	strate knowledge and understandin industry. and how risk can be managed throug e and contrast different types of cominand arrange their own personal insur	g of the underlying financial and le th insurance. mercial and personal insurance produrance needs.	gal principles of the		
	•				
- risk in ou - insurance - introducti - fundamer - life insura	r society, e and risk, ion to risk management, ntal legal principles, and analysis of ir ance, their contractual provisions,	nsurance contracts,			
insurance principles individuals	products, to students. To allow st underlying the techniques for mai . Aiming at students who have min	udents to understand the statistical naging the insurable risks faced by imal background in quantitative meth	, financial and legal y organisations and nods, it involves very		
	insurance principles individuals minimal quarter principles individuals minimal quarter principle. Interest in our insurance introduct fundame life insuration individual on succes 1. Undersit principle. Interest in Burnance 3. Underst 4. Compar 5. Plan for Pass in Burnance 3. Underst 4. Compar 5. Plan for Pass in Burnance or Business (STAT160 statistics: 1 (Not available Y 2nd Y A+ to F A B C	insurance products, to students. To allow st principles underlying the techniques for mai individuals. Aiming at students who have min minimal quantitative calculations and is not avairable. The course introduces and explains: - risk in our society, - insurance and risk, - introduction to risk management, - fundamental legal principles, and analysis of ir life insurance, their contractual provisions, - individual health insurance coverages. On successful completion of the course, student 1. Understand the general risks faced by organ principle. 2. Demonstrate knowledge and understandin insurance industry. 3. Understand how risk can be managed throught. Compare and contrast different types of comits. Plan for and arrange their own personal insurence in maintain provides and any University level (STAT1603 Introductory statistics or (ECON128 course) or (STAT1601 Elementary statistical in Business statistics and any University level (STAT1603 Introductory statistics and any Ustatistics: foundations of actuarial science. (Not available to Actuarial Science students) Y 2nd sem Y A+ to F A Demonstrate thorough mastery at an advar course learning outcomes. Show strong an thought, and ability to apply knowledge to effective organizational and presentational science learning outcomes. Show evide apply knowledge to familiar and some unfar learning outcomes. Show evidence of som knowledge to familiar situations. Apply Demonstrate partial but limited command of outcomes. Show evidence of some cohern Show limited ability to apply knowledge to outcomes. Show evidence of some cohern Show limited ability to apply knowledge to soutcomes. Show evidence of some cohern Show limited ability to apply knowledge to soutcomes. Show evidence of some cohern Show limited ability to apply knowledge to soutcomes. Show evidence of some cohern Show limited ability to apply knowledge to soutcomes. Show evidence of some cohern Show limited ability to apply knowledge to soutcomes. Show evidence of some cohern Show limited solities to apply	- risk in our society, - insurance and risk, - introduction to risk management, - fundamental legal principles, and analysis of insurance contracts, - life insurance, their contractual provisions, - individual health insurance coverages. On successful completion of the course, students should be able to: 1. Understand the general risks faced by organisations and individuals and the generinciple. 2. Demonstrate knowledge and understanding of the underlying financial and le insurance industry. 3. Understand how risk can be managed through insurance. 4. Compare and contrast different types of commercial and personal insurance produ 5. Plan for and arrange their own personal insurance needs. Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and at course) or (STAT1601 Elementary statistical methods and any University level 2 curse) or STAT2601 Probability (STAT1603 Introductory statistics and any University level 2 course) or STAT2 statistics: foundations of actuarial science. (Not available to Actuarial Science students) Y 2nd sem A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills recursed in the course learning outcomes. Show strong analytical and critical abilities and logical thinking thought, and ability to apply knowledge to a wide range of knowledge and skills required for the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking apply knowledge to familiar and some unfamiliar situations. Apply effective organizational at learning outcomes. Show evidence of some analytical and critical abilities and logical thinking hourselds and critical abilities and logical thinking but with limited command of knowledge and skills required for attaining actuaring outcomes. Show evidence of some analytical and critical abilities and logical thinking but with limited command of knowledge and skills required for attaining actuaring outcomes. Show evidence of some coherent and logical thinking, but with limited analytical a		

STAT3611 Computer-a	ided data analysis (6 credits)	Academic Year	2014
Offering Department	Statistics & Actuarial Science	Quota	
Course Co-ordinator	Dr E K F Lam, Statistics & Actuarial Science (hrntlkf@hku.hk)		
Teachers Involved	Dr E K F Lam, Statistics & Actuarial Science Dr K Y Wu, Statistics & Actuarial Science Ms O T K Choi, Statistics & Actuarial Science		
Course Objectives	A wide range of statistical analyses and methods are presente research and scientific studies. Measuring uncertainty, describ relationship between several variables are essential aspects of s	ing patterns of variability	and the inter-

	concepts a	ting of statistics. This computer-orie and methods of statistics. The cou tistical software JMP. No knowledge	irse makes extensive us	se of computer	s through the user
Course Contents & Topics		oration, formulation of testable hypost experience.	otheses, the evaluation of	of evidence and	forecasting on the
Course Learning Outcomes	Summar Describe variables. Carry ou	sful completion of the course, studer ize and describe the quantitative an e the patterns of variability and the at simple statistical analyses based of e statistical inferences and make inte	d qualitative data using se inter-relationship between some real life data, fo	een several cor	ntinuous or discrete
Pre-requisites (and Co-requisites and Impermissible combination)	course) or Business s University I Not for stu Probability	OL2102 Biostatistics or (ECON128 (STAT1601 Elementary statistical istatistics and any University level level 2 course); and udents who have passed in or ha and statistics I, STAT2901 Prob Advanced SAS programming	methods and any Univer 2 course) or (STAT160 we already enrolled in a	rsity level 2 coo 33 Introductory any of these o	statistics and any courses: STAT2601
Offer in 2014 - 2015	N			Examination	
Offer in 2015 - 2016	N				
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an adva course learning outcomes. Show strong at thought, and ability to apply knowledge to effective organizational and presentational	nalytical and critical abilities an a wide range of complex, fam	d logical thinking,	with evidence of original
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning				
	Fail	outcomes. Lack of analytical and critical al knowledge to solve problems. Organization	bilities, logical and coherent thi	nking. Show very li	ttle or no ability to apply
Course Type	Lecture-ba	sed course			
Course Teaching & Learning Activities	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading /	Self study			100
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)
	Assignme	nts	Coursework (assi	gnments,	40
			practical work, and a	term test)	40
	Examinati		One 2-hour written e	,	60
Required/recommended reading and online materials	G. C. Cana edition) E. R. Babb J. E. Freun R. Hooke: D. G. Klein Methods (I	on avos & D. M. Miller: An Introduction ie: The Practice of Social Research id & G. A. Simon: Statistics - A First How to tell the liars from the Statistic nbaum, L. L. Kupper, & K. E. Mu Duxbury Press, 1988, 2nd edition) ne, M. L. Berenson, & D. Stephan:	One 2-hour written en to Modern Business St (Wadsworth Pub. Co., B. Course (Prentice Hall, 7t cians (Marcel Dekker) ller: Applied Regression	xamination atistics (Duxbu elmont, 7th edit h edition) Analysis and	ry Press, 1999, 2nd ion) Other Multivariable
reading	G. C. Cana edition) E. R. Babb J. E. Freun R. Hooke: D. G. Klein Methods (I D. M. Levi	on avos & D. M. Miller: An Introduction ie: The Practice of Social Research d & G. A. Simon: Statistics - A First How to tell the liars from the Statistic nbaum, L. L. Kupper, & K. E. Mu Duxbury Press, 1988, 2nd edition) ne, M. L. Berenson, & D. Stephan: dition)	One 2-hour written en to Modern Business St (Wadsworth Pub. Co., B. Course (Prentice Hall, 7t cians (Marcel Dekker) ller: Applied Regression	xamination atistics (Duxbu elmont, 7th edit h edition) Analysis and	ry Press, 1999, 2nd ion) Other Multivariable

STAT3612 Data mining (6 c	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota	10
Course Co-ordinator	Dr G C S Lui, Statistics & Actuarial Science (csglui@hku.hk)		

O		_ui, Statistics & Actuarial Science			
Course Objectives	fields such these data has led to process, a	splosion in information technology in as finance, customer relations read with the aim of creating new known the innovative usage of statistic new area called data mining is spof essential data mining concepts a	nanagement and med owledge and finding n cal methodologies ar oawned. This course p	dicine. The challenge new relationships amound advelopment of r provides a compreher	of understanding ong data attributes new ones. In this
Course Contents & Topics	Data pre-panalysis.	processing, association rules, class	sification and regress	sion trees, neural net	works and cluster
Course Learning Outcomes	1. Implem exploring, 2. Unders strengths a 3. Be profi 4. Identify the nature 5. Evaluat	esful completion of the course, student data mining process summa modifying, modeling, and assessint and and apply a wide range of and weaknesses. cient with the leading data mining and use appropriate data mining of the data to be mined and the goe the quality of discovered knowle solved and the goals of the user.	rized in the acronym g data. data mining technique softwareSAS Enterp echniques for a data als of the user of the o	n SEMMA which star es, and recognize the prise Miner. mining project, taking discovered knowledge	eir characteristics, g into account both
Pre-requisites (and Co-requisites and Impermissible combination)		TAT2602 Probability and statisticurse) or STAT3902 Statistical mode		troductory statistics a	and any University
Offer in 2014 - 2015	Y 2nd	sem		Examination	No Exam
Offer in 2015 - 2016	Υ			1 10111111	
Course Grade	A+ to F				
Grade Descriptors	A				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				Uliai Skilis.
		outcomes. Show evidence of some collishow limited ability to apply knowledg	nerent and logical thinking,	, but with limited analytica	of the course learning al and critical abilities.
	Fail	outcomes. Show evidence of some collishow limited ability to apply knowledg	merent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning all and critical abilities. we organizational and g the course learning e or no ability to apply
Course Type	Fail	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical	merent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning all and critical abilities. we organizational and g the course learning e or no ability to apply
Course Teaching	Fail	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat	merent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning all and critical abilities. we organizational and g the course learning e or no ability to apply
Course Teaching	Fail Lecture-ba	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat	nerent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere on and presentational skills	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning all and critical abilities. we organizational and and go the course learning e or no ability to apply ineffective.
Course Teaching	Fail Lecture-ba	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat	nerent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere on and presentational skills	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning and critical abilities. we organizational and g the course learning e or no ability to apply ineffective.
Course Teaching	Fail Lecture-ba Activities Lectures Tutorials	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat	nerent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere on and presentational skills	, but with limited analytica y limited or barely effective skills required for attaining ent thinking. Show very little	of the course learning and critical abilities. we organizational and g the course learning e or no ability to apply ineffective. No. of Hours 36
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat	nerent and logical thinking, e to solve problems. Appl mmand of knowledge and abilities, logical and cohere on and presentational skills	, but with limited analytica y limited or barely effective skills required for attaining the thinking. Show very little are minimally effective or in the control of the control of t	of the course learning and critical abilities. we organizational and ag the course learning e or no ability to apply ineffective. No. of Hours 36 12
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat ased course S Self study	nerent and logical thinking, e to solve problems. Applemmand of knowledge and abilities, logical and cohere on and presentational skills Details	, but with limited analytica y limited or barely effective skills required for attaining the thinking. Show very little are minimally effective or in the control of the control of t	of the course learning and critical abilities. We organizational and g the course learning e or no ability to apply ineffective. No. of Hours 36 12 100 Weighting in final
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat ased course Self study	nerent and logical thinking, e to solve problems. Applemmand of knowledge and abilities, logical and cohere on and presentational skills Details	, but with limited analytica y limited or barely effective skills required for attaining the thinking. Show very little are minimally effective or in the control of the control of t	of the course learning and critical abilities. We organizational and and ag the course learning e or no ability to apply ineffective. No. of Hours 36 12 100 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Assignment	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of co outcomes. Lack of analytical and critical knowledge to solve problems. Organizat ased course Self study	nerent and logical thinking, e to solve problems. Applemmand of knowledge and abilities, logical and cohere on and presentational skills Details	, but with limited analytica y limited or barely effective skills required for attaining the thinking. Show very little are minimally effective or in the control of the control of t	of the course learning and critical abilities. We organizational and g the course learning e or no ability to apply ineffective. No. of Hours 36 12 100 Weighting in final course grade (%)
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Assignme Project re Test Tan, P. N. T. Hastie, Prediction M. Kantara A. Webb: \$Shmueli, (Application J. Han & M.	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of coutcomes. Lack of analytical and critical knowledge to solve problems. Organizating ased course See See See See See See See See See S	merent and logical thinking, e to solve problems. Applement and foliation of knowledge and abilities, logical and cohere on and presentational skills Details	but with limited analytically limited or barely effective or limited or barely effective skills required for attaining the thinking. Show very littles are minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited by the sam	of the course learning and critical abilities. We organizational and gethe course learning e or no ability to apply ineffective. No. of Hours 36 12 100 Weighting in final course grade (%) 30 40 2006) ing, Inference, and 2nd edition)
& Learning Activities Assessment Methods and Weighting Required/recommended reading	Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Assignme Project re Test Tan, P. N. T. Hastie, Prediction M. Kantara A. Webb: \$Shmueli, (Application J. Han & M.	outcomes. Show evidence of some col Show limited ability to apply knowledg presentational skills. Demonstrate little or no evidence of coutcomes. Lack of analytical and critical knowledge to solve problems. Organizate ased course Seed co	merent and logical thinking, e to solve problems. Applement and foliation of knowledge and abilities, logical and cohere on and presentational skills Details	but with limited analytically limited or barely effective or limited or barely effective skills required for attaining the thinking. Show very littles are minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited or limited by the same minimally effective or limited by the sam	of the course learning and critical abilities. We organizational and g the course learning e or no ability to apply ineffective. No. of Hours 36 12 100 Weighting in final course grade (%) 30 40 2006) ing, Inference, and s, Techniques, and 2nd edition)

STAT3613 Marketing en	gineering (6 credits)	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota		
Course Co-ordinator	Dr C W Kwan, Statistics & Actuarial Science (cwkwan@hku.hk)			

Teachers Involved	Dr C W Kv	van, Statistics & Actuarial Science	e		
Course Objectives	This course is designed to provide an overview and practical application of trends, technology and methodology used in the marketing survey process including problem formulation, survey design, data collection and analysis, and report writing. Special emphasis will be put on statistical techniques particularly for analysing marketing data including market segmentation, market response models, consumer preference analysis and conjoint analysis. Students will analyse a variety of marketing case studies.				
Course Contents & Topics			ponse models, Survey research, Standard, Statistical methods for new produc		
Course Learning Outcomes	On succes	ssful completion of the course, stu	idents should be able to:		
	1. Develop the hands-on skills of curve fitting and analyzing data with SAS procedures including PROC MODEL, PROC NLP, PROC CLUSTER, PROC FASTCLUS, PROC FACTOR, PROC MDS, PROC PRINQUAL, PROC TRANSREG, PROC LOGISTIC, PROC MDC, PROC DISCRIM and PROC CALIS. 2. Understand marketing decision models. 3. Understand cluster analysis, factor analysis, multidimensional scaling, correspondence analysis, conjoint analysis, choice models, confirmatory factor analysis, and discriminant analysis in market segmentation, positioning and new product design.				
Pre-requisites (and Co-requisites and Impermissible combination)	course) or Business (STAT160	(STAT1601 Elementary statistic statistics and any University le	11280 Analysis of economic data and cal methods and any University level 2 evel 2 course) or STAT2601 Probability University level 2 course) or STAT	course) or (STAT1602 ty and statistics I or	
Offer in 2014 - 2015	Y 1st	sem	Examination	n Dec	
Offer in 2015 - 2016	Y				
Course Grade	A+ to F				
Grade Descriptors	A	advanced level of extensive knowledge and skills ng analytical and critical abilities and logical thinkir e to a wide range of complex, familiar and unfam onal skills.	ig, with evidence of original		
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.			
	Fail	outcomes. Lack of analytical and critic	command of knowledge and skills required for at al abilities, logical and coherent thinking. Show ve ation and presentational skills are minimally effecti	ry little or no ability to apply	
Course Type	Lecture-ba	ased course			
Course Teaching	Activities		Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading /	Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignme	ents	Coursework (assignments, a class test and a group project)	50	
	Examination One 2-hour written examination 50				
	Examinat	ion	One 2-nour written examination	30	
Required/recommended reading and online materials	Lattin J., C Malhotra, I Johnson R	Carroll J.D. and Green P.E.: Analy Naresh: Marketing Research: An R., Wichern D.: Applied Multivariat	one 2-nour written examination sing multivariate data (Thomson) Applied Orientation (Pearson, 2010, 6th e Statistical Analysis (Prentice Hall, 5th Engineering (Prentice Hall, 2003, 2nd ec	ed.)	

STAT3614 Business forec	asting (6 credits)	Academic Year	2014	
Offering Department	Statistics & Actuarial Science Quota			
Course Co-ordinator	Dr R W L Wong, Statistics & Actuarial Science (rwong@hku.hk)			
Teachers Involved	Dr R W L Wong, Statistics & Actuarial Science			
Course Objectives	In daily business operations, forecasts are routinely required on a market and individual companies. Numerous statistical technique decades to provide forecasts for the business decision-maker. The such techniques that have proven useful to practitioners. The cousoftware, EXCEL, in the teaching process.	s have been develop is course considers a	ed in the past wide range of	
Course Contents & Topics	Review of basic statistical concepts; autocorrelation analysis; eval moving averages and smoothing methods; simple linear regression			

	time series	time series regression; the handling of seasonal cycles; decomposition methods.				
Course Learning Outcomes	On succes	ssful completion of the course	, students sh	ould be able to:		
	 Understand data patterns and choose a suitable forecasting techniques. Understand forecasting methods: moving averages and smoothing methods, decomposition and winter's methods, simple and multiple linear regression. Develop hands-on skills of analyzing business data with computer software, EXCEL, and its add-ins functions. 					
Pre-requisites (and Co-requisites and Impermissible combination)	course) or Business University Not for stu statistics I,	Pass in BIOL2102 Biostatistics or (ECON1280 Analysis of economic data and any University level 2 course) or (STAT1601 Elementary statistical methods and any University level 2 course) or (STAT1602 Business statistics and any University level 2 course) or (STAT1603 Introductory statistics and any University level 2 course); and Not for students who have passed or already enrolled in any of these courses: STAT2601 Probability and statistics I, STAT2901 Probability and statistics: foundations of actuarial science, STAT3907 Linear models and forecasting, STAT4601 Time-series analysis, ECON2280 Introductory econometrics.				
Offer in 2014 - 2015	N			Examination	n	
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show	strong analytica wledge to a wide	evel of extensive knowledge and skills al and critical abilities and logical thinkir a range of complex, familiar and unfam	ng, with e	vidence of original
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	outcomes. Lack of analytical and	critical abilities,	of knowledge and skills required for at logical and coherent thinking. Show ve resentational skills are minimally effective	ry little or	no ability to apply
						ective.
Course Type	Lecture-ba	ased course				ective.
Course Teaching	Lecture-ba		D	etails		No. of Hours
Course Teaching			D	etails		
Course Teaching	Activities		D	etails		No. of Hours
Course Teaching	Activities Lectures Tutorials		D	etails		No. of Hours
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Activities Lectures Tutorials	Self study		etails etails		No. of Hours 36 12
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Tutorials Reading	Self study	D			No. of Hours 36 12 100 ighting in final
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Tutorials Reading	S / Self study	D C tu	etails oursework (assignments,		No. of Hours 36 12 100 ighting in final urse grade (%)
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Tutorials Reading / Methods Assignme Examinat J. E. Hank P. E. Gayl Economics	Self study ents ion e, D. W. Wichern, & A. G. Re	C tu O eitsch: Busine duction to Tir	oursework (assignments, atorials, and a class test) one 2-hour written examination oness Forecasting (Prentice Hall, 2 me-series Modelling and Foreca	009, 9th	No. of Hours 36 12 100 ighting in final urse grade (%) 40 60
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading	Activities Lectures Tutorials Reading / Methods Assignme Examinat J. E. Hank P. E. Gayl Economics	ents ion e, D. W. Wichern, & A. G. Renor & R. C. Kirkpatrick: Intros (McGraw-Hill, 1994) d & T. Bos: Introductory Busi	C tu O eitsch: Busine duction to Tir	oursework (assignments, atorials, and a class test) one 2-hour written examination oness Forecasting (Prentice Hall, 2 me-series Modelling and Foreca	009, 9th	No. of Hours 36 12 100 ighting in final urse grade (%) 40 60

STAT3615 Practical mathe	matics for investment (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science Quota				
Course Co-ordinator	Prof K C Yuen, Statistics & Actuarial Science (kcyuen@hku.hk)				
Teachers Involved	Prof K C Yuen, Statistics & Actuarial Science				
Course Objectives	The main focus of this course is built on the concepts on financial numbers concepts are also considered.	nathematics. Praction	cal applications of		
Course Contents & Topics	This course covers: simple and compound interest; annuities certain; discounted cash flow analysis; amortization schedules and sinking funds; yield rates; bonds and related securities; practical applications such as real estate mortgage, short sales and term structure of interest rates.				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Solve practical problems relating to annuities certain, simple and c 2. Carry out discounted cash flow analysis. 3. Apply amortization schedules and sinking funds to the practical pro-	•	estate mortgage.		
Pre-requisites (and Co-requisites and	Pass in (STAT1601 Elementary statistical methods and any Unive Business statistics and any University level 2 course) or STAT:				

Impermissible combination)	statistics	: foundations of actuarial science; ar	University level 2 course) or STA ad 2902 Financial mathematics, or have	•
Offer in 2014 - 2015	Y 2n	d sem	Examination	on May
Offer in 2015 - 2016	Υ			<u>'</u>
Course Grade	A+ to F			
Grade Descriptors	Α	course learning outcomes. Show strong	vanced level of extensive knowledge and skill analytical and critical abilities and logical thinl to a wide range of complex, familiar and unfa al skills.	king, with evidence of original
	В	the course learning outcomes. Show ev	broad range of knowledge and skills required ridence of analytical and critical abilities and lifamiliar situations. Apply effective organization	logical thinking, and ability to
	С	learning outcomes. Show evidence of se	ommand of knowledge and skills required for ome analytical and critical abilities and logical oply moderately effective organizational and pro	I thinking, and ability to apply
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.		
	Fail	outcomes. Lack of analytical and critical	mmand of knowledge and skills required for abilities, logical and coherent thinking. Show on and presentational skills are minimally effect	very little or no ability to apply
Course Type	Lecture-b	pased course		
Course Teaching	Activitie	9S	Details	No. of Hours
& Learning Activities	Lectures	S		36
	Tutorials	3		12
	Reading / Self study			100
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)
	Assignm	nents	Coursework (assignments, tutorials, and a class test)	25
	Examina	ation	One 3-hour written examination	75
Required/recommended reading and online materials	Broverma	S. G.: The Theory of Interest (Irwin: an, S. A.: Mathematics of Investment, 2004, 3rd edition)	Illinois, 2008, 3rd edition) nent and Credit (ACTEX Publication	ns - Mad River Books:
Course Website	moodle.h	ıku.hk		

STAT3616 Advanced SAS	programn	ning (6 credits)	Academic Year	2014
Offering Department	Statistics	& Actuarial Science	Quota	10
Course Co-ordinator	Prof K W	Ng, Statistics & Actuarial Science (kaing@hku.hk)	<u>'</u>	'
Teachers Involved	Prof K W	Ng, Statistics & Actuarial Science		
Course Objectives		se aims to equip students, who have taken STAT26 ning for automation of procedures and data proce		
Course Contents & Topics	data sim	of SAS underlying parts. Macro programming. Adulation, advanced data look-up techniques, modifying and memory.		
Course Learning Outcomes	1. Unders 2. Use th 3. Use th 4. Use SA	essful completion of the course, students should be abustand the system of SAS and basic programming. By Statement for parallel processing to aid automatically entire output dataset without printing to OUTPUT windows AS MACRO to develop customized and automated applyanced SAS programming statements and technique	on. for piping idea in automa plications.	
Pre-requisites (and Co-requisites and Impermissible combination)	science	11 Probability and statistics I or STAT2901 Probability are strongly recommended to take STAT2603 Data	•	
Offer in 2014 - 2015	Y 2n	d sem	Examination	May
Offer in 2015 - 2016	Υ			
Course Grade	A+ to F			
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extens course learning outcomes. Show strong analytical and critical thought, and ability to apply knowledge to a wide range of coeffective organizational and presentational skills.	abilities and logical thinking, w	ith evidence of original
	В	Demonstrate substantial command of a broad range of knowledge	adae and skills required for att	aining at least most of

			vidence of analytical and critical abilities and loginfamiliar situations. Apply effective organizational a		
	С	learning outcomes. Show evidence of s	ommand of knowledge and skills required for atta some analytical and critical abilities and logical thi pply moderately effective organizational and prese	nking, and ability to apply	
	D	outcomes. Show evidence of some co	nd of knowledge and skills required for attaining so herent and logical thinking, but with limited analy ge to solve problems. Apply limited or barely eff	ytical and critical abilities.	
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the cour outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no abi knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.			
Course Type	Lecture-ba	ased course			
Course Teaching	Activities	S	Details	No. of Hours	
& Learning Activities	Lectures			36	
	Tutorials			12	
	Reading /	/ Self study		100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	50	
	Examinat	ion	One 2-hour written examination	50	
Required/recommended reading and online materials	Carpenter	SAS Certification Prep Guide: Advanced Programming for SAS 9, Third Edition. Carpenter, A.: Carpenters Complete Guide to the SAS Macro Language. Second Edition. (North Car SAS Institute Inc., 2004)			
Course Website	moodle.hk	:u.hk			

STAT3617 Sample survey	illetilous (· · · · · · · · · · · · · · · · · · ·				
Offering Department	Statistics	& Actuarial Science	Quota			
Course Co-ordinator	Ms O T K	Choi, Statistics & Actuarial Science (ochoi@hku.hk)				
Teachers Involved		Ms O T K Choi, Statistics & Actuarial Science Prof F W H Ho, Statistics & Actuarial Science				
Course Objectives	obtained. etc. Sam	This course will cover design and implementation of sample surveys and analysis of statistical data the obtained. Survey design includes overall survey design, design of sampling schemes and questionnaire etc. Sampling methods include sample size determination, sampling and non-sampling errors and biase methods of estimation of parameters from survey data, imputation for missing data etc.				
Course Contents & Topics	managem simple ra sample s errors and methods	Topics may include: survey design and planning; survey quality and ethics; implementation matters lik management of survey staff, respondent relationship and logistical issues; and sampling methods lik simple random sampling, systematic sampling, stratified sampling, cluster sampling, multi-stage samplin sample size determination, post-stratification, ratio and regression estimation methods, non-samplin errors and biases, non-responses and missing data. Case studies of major applications of sample surve methods in the public and private sectors, with some examples on the analysis and application of the statistical data thus produced, will be discussed.				
Course Learning Outcomes		ssful completion of the course, students should be ablestrate knowledge and understanding of the variou		the planning and		
	implemer 2. Desigr particular	Intation of sample surveys. In different sample schemes and select the most eff survey - make statistical inference on parameters bas whether the statistics presented by other survey takers.	icient and suitable one led on a sample.			
(and Co-requisites and	implemer 2. Design particular 3. Judge Pass or a University course), and statis	station of sample surveys. In different sample schemes and select the most eff survey - make statistical inference on parameters bas	icient and suitable one led on a sample. s are trustworthy. V1280 Analysis of economical methods and any level 2 course), or STA	for adoption for a mic data and an University level 2 T2601 Probabilit		
(and Co-requisites and Impermissible combination)	implemer 2. Design particular 3. Judge Pass or a University course), and statis Probabilit	station of sample surveys. In different sample schemes and select the most eff survey - make statistical inference on parameters bas whether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECOI) relevel 2 course), or (STAT1601 Elementary statistics or (STAT1602 Business statistics and any University stics I, or (STAT1603 Introductory statistics and any	icient and suitable one led on a sample. s are trustworthy. V1280 Analysis of economical methods and any level 2 course), or STA	for adoption for a mic data and an University level 2 T2601 Probabilit		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	implemer 2. Design particular 3. Judge Pass or a University course), and statis Probabilit	station of sample surveys. In different sample schemes and select the most efficient survey - make statistical inference on parameters basewhether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECON VIEVEL 2 course), or (STAT1601 Elementary statistics or (STAT1602 Business statistics and any University statist I, or (STAT1603 Introductory statistics and any y and statistics: foundations of actuarial science.	icient and suitable one led on a sample. s are trustworthy. N1280 Analysis of economical methods and any level 2 course), or STA University level 2 course.	for adoption for a mic data and an University level 2 T2601 Probabilit se), or STAT290		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	implemer 2. Desigr particular 3. Judge Pass or a University course), o and statis Probabilit Y 2nd	station of sample surveys. In different sample schemes and select the most efficient survey - make statistical inference on parameters basewhether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECON VIEVEL 2 course), or (STAT1601 Elementary statistics or (STAT1602 Business statistics and any University statist I, or (STAT1603 Introductory statistics and any y and statistics: foundations of actuarial science.	icient and suitable one led on a sample. s are trustworthy. N1280 Analysis of economical methods and any level 2 course), or STA University level 2 course.	for adoption for a mic data and an University level 2 T2601 Probabilit se), or STAT290		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	implemer 2. Design particular 3. Judge Pass or a University course), and statis Probabilit Y 2nd Y	station of sample surveys. In different sample schemes and select the most efficient survey - make statistical inference on parameters basewhether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECON VIEVEL 2 course), or (STAT1601 Elementary statistics or (STAT1602 Business statistics and any University statist I, or (STAT1603 Introductory statistics and any y and statistics: foundations of actuarial science.	icient and suitable one led on a sample. s are trustworthy. M1280 Analysis of econocical methods and any level 2 course), or STA University level 2 course. Examination	for adoption for a mic data and an University level 2 T2601 Probabilit se), or STAT290 May defor attaining all the th evidence of origina		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	implemer 2. Desigr particular 3. Judge Pass or a University course), and statis Probabilit Y 2nd Y A+ to F	n different sample surveys. In different sample schemes and select the most eff survey - make statistical inference on parameters bas whether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECON velevel 2 course), or (STAT1601 Elementary statistics or (STAT1602 Business statistics and any University stics I, or (STAT1603 Introductory statistics and any y and statistics: foundations of actuarial science. It is become become the property of the statistics and any course learning outcomes. Show strong analytical and critical is thought, and ability to apply knowledge to a wide range of cor	icient and suitable one led on a sample. s are trustworthy. 1/1280 Analysis of economical methods and any level 2 course), or STA University level 2 course. Examination Examination Examination Examination Examination	for adoption for a mic data and an University level 2 T2601 Probabilit se), or STAT290 May May ed for attaining all the th evidence of origina truations. Apply highly sining at least most o hinking, and ability to		
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	implemer 2. Desigr particular 3. Judge Pass or a University course), and statis Probabilit Y 2nd Y A+ to F	tation of sample surveys. In different sample schemes and select the most eff survey - make statistical inference on parameters bas whether the statistics presented by other survey takers already enrolled in: BIOL2102 Biostatistics, or (ECOI) or (STAT1602 Business statistics and any University stics I, or (STAT1603 Introductory statistics and any y and statistics: foundations of actuarial science. In the statistics of surveys at an advanced level of extens course learning outcomes. Show strong analytical and critical in thought, and ability to apply knowledge to a wide range of coreffective organizational and presentational skills. Demonstrate substantial command of a broad range of knowle the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes. Show evidence of analytical and the course learning outcomes.	icient and suitable one led on a sample. s are trustworthy. N1280 Analysis of econolical methods and any level 2 course), or STA University level 2 course. Examination Examination Examination ive knowledge and skills required bilities and logical thinking, wind critical abilities and logical thinking wind critical abilities and logical and skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind skills required for attainir ical abilities and logical thinking wind wind wind wind wind wind wind wind	for adoption for a mic data and an University level 2, 172601 Probabilities), or STAT290 May May ed for attaining all the the evidence of original ituations. Apply highly aining at least most on hinking, and ability to oresentational skills. g most of the course g, and ability to apply and applied to the course g, and ability to apply and ability to apply and applied to the course g, and ability to apply and ability to apply and applied to the course g, and ability to apply the course g.		

		presentational skills.			
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the coutcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no knowledge to solve problems. Organization and presentational skills are minimally effective or ineffecti			
Course Type	Lecture-b	pased course			
Course Teaching & Learning Activities	Activitie	es Details	No. of Hours		
& Learning Activities	Lectures	3	36		
	Tutorials	3	12		
	Reading	/ Self study	100		
Assessment Methods and Weighting	Methods	S Details	Weighting in final course grade (%)		
	Assignm	Coursework (assignments, tutorials, and a class test)	25		
	Examina	otion One 2-hour written examination	75		
Required/recommended reading and online materials	R. L. Sch edition) W. G. Co R. M. G Methodol L. Kish: S	S. L. Lohr: Sampling: Design and Analysis, 2nd edition (Duxbury Press, 2010) R. L. Scheaffer, W. Mendenhall, & R. L. Ott: Elementary Survey Sampling (Duxbury Press, 2011, 7th			
Course Website	moodle.h	ku.hk			

STAT3618 Derivatives and	d risk mana	agement (6 credits)	Academic Year	2014
Offering Department	Statistics	& Actuarial Science	Quota	
Course Co-ordinator	Dr R W L	Wong, Statistics & Actuarial Science (rwong@hku.hk)		
Teachers Involved	Dr R W L	Wong, Statistics & Actuarial Science		
Course Objectives	types of d derivative basic ide	s all risk managers must be well versed in the use and verticatives are forwards (having a linear payoff) and options can be decomposed to these underlying payoffs or alteres. This course aims at demonstrating the practical lent. Emphases are on pricing and hedging strategies, and	(having a non-linea rnatively they are va use of financial d	r payoff). All oth ariations on the erivative in ris
Course Contents & Topics	pricing of parity; val and Ame interpreta	futures, forwards and options and the concept of no arbiti- forward and futures; interest rate futures and swaps; tra- uation of European and American options using the binon- rican options using the Black-Scholes option pricing mo- tion; implied volatility; delta hedging and the role of market- tions, compound options, gap options and exchange option	ding strategies using hial-tree model; valualel; the Greeks: the makers; exotic optio	g options; put-ca ation of Europea ir calculation ar
Course Learning Outcomes	On succe	ssful completion of the course, students should be able to:		
	 Determ formula. Explain 	ure, forwards, options and swaps to formulate financial stra ine the payoff and the value of various derivative products how derivative products can be used as tools to manage f nize how to decompose complicated derivatives into a profo	using binomial tree inancial risk.	
Pre-requisites and Co-requisites and mpermissible combination)	Not for BS Not for st course; an Not for st enrolled in	TAT3615 Practical mathematics for investment; and Sc(Actuarial Science) students; and udents who have passed in STAT3910 Financial economical tudents who have passed in STAT3905 Introduction to the history of the third course; and udents who have passed in FINA2322 Derivatives, or have	inancial derivatives,	or have alread
011 1 0044 0045	Y 1st		Examination	
otter in 2014 - 2015		sem		Dec
	Y	sem	ı	Dec
Offer in 2015 - 2016	-	sem		Dec
Offer in 2015 - 2016 Course Grade	Υ	Demonstrate thorough mastery at an advanced level of extensive knicourse learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex, effective organizational and presentational skills.	and logical thinking, with	ed for attaining all the
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F	Demonstrate thorough mastery at an advanced level of extensive knicourse learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex,	s and logical thinking, with familiar and unfamiliar si and skills required for atta cal abilities and logical th	ed for attaining all the nevidence of origin truations. Apply high ining at least most inking, and ability
Offer in 2015 - 2016 Course Grade	Y A+ to F	Demonstrate thorough mastery at an advanced level of extensive known course learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complex, effective organizational and presentational skills. Demonstrate substantial command of a broad range of knowledge a the course learning outcomes. Show evidence of analytical and critical process.	s and logical thinking, with familiar and unfamiliar sinnd skills required for atta cal abilities and logical the ctive organizational and p kills required for attaining illities and logical thinking	ed for attaining all the evidence of original tractions. Apply high sining at least most ninking, and ability fresentational skills.

	Fail	outcomes. Lack of analytica	idence of command of knowledge and skills required for I and critical abilities, logical and coherent thinking. Show s. Organization and presentational skills are minimally effe	very little or no ability to apply
Course Type	Lecture-b	pased course		
Course Teaching & Learning Activities	Activities		Details	No. of Hours
a Learning Activities	Lectures			36
	Tutorials			12
	Reading	/ Self study		100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignm	ients	Coursework (assignments, tutorials, and a class test)	25
	Examina	ation	One 2-hour written examination	n 75
Required/recommended reading and online materials	11, 13, 17 McDonald	7-18, 24. d, R. L.: Derivatives Marke	Other Derivatives (Prentice Hall, 2009, 7th edets (Addison Wesley, 2006, 2nd edition), Chapt inancial Institutions (Pearson Higher Education	ters 1-2, 4-5, 7-14, 23.
Course Website	moodle.h	ku.hk		

OTATOOZO MOGETTI HOTIPA	rametric st	tatistics (6 credits)		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Dr P L H	Yu, Statistics & Actuarial Science	e (plhyu@hku.hk)			
Teachers Involved	Dr P L H	Yu, Department of Statistics and	Actuarial Science			
Course Objectives		The course aims to acquaint students with the fundamentals, basic properties and use of classical an modern nonparametric statistical methods for data analysis.				
Course Contents & Topics	independ	Topics may include: order-statistics; goodness-of-fit tests; rank tests for single-sample and tw independent samples; tests for designed experiments; permutation tests; tests for trends and association jackknife and bootstrapping methods; nonparametric regression.				
Course Learning Outcomes	1. Identif 2. Perfor 3. Gain a nonparar	essful completion of the course, so y appropriate nonparametric met may a variety of nonparametric state a working proficiency in the use of metric statistical analyses. Wely communicate findings and communicate findings and communicate findings.	hods for analyzing data. istical analyses. of statistical software for c		d performing basi	
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	STAT2602 Probability and statisti	cs II			
Offer in 2014 - 2015	Y 1s	t sem		Examination	Dec	
Offer in 2015 - 2016	Υ			'		
Course Grade	A+ to F					
Grade Descriptors						
Grade Descriptors	A	Demonstrate thorough mastery at a course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presented Demonstrate substantial command	rong analytical and critical abiliti dge to a wide range of complex ational skills.	es and logical thinking, wit k, familiar and unfamiliar si	th evidence of origina tuations. Apply highly	
Grade Descriptors	В	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presenta	rong analytical and critical abilitidge to a wide range of complexational skills. of a broad range of knowledge wevidence of analytical and cr	es and logical thinking, wit k, familiar and unfamiliar si and skills required for atta- itical abilities and logical t	th evidence of origina ituations. Apply highly sining at least most o hinking, and ability to	
Grade Descriptors		course learning outcomes. Show str thought, and ability to apply knowle- effective organizational and presents Demonstrate substantial command the course learning outcomes. Sho	ong analytical and critical abiliti dge to a wide range of complex ational skills. of a broad range of knowledge wevidence of analytical and crite unfamiliar situations. Apply effectorms and of some analytical and critical and of some analytical and critical and c	es and logical thinking, wit, familiar and unfamiliar si and skills required for atta titical abilities and logical t fective organizational and p skills required for attainin abilities and logical thinkin	th evidence of original truations. Apply highly hinning at least most of hinking, and ability to presentational skills. If the course g, and ability to apply and ability to apply and ability to apply the course g, and ability to apply the course g.	
Grade Descriptors	В	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and present Demonstrate substantial command the course learning outcomes. Sho apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence	rong analytical and critical abilitidge to a wide range of complex attional skills. of a broad range of knowledge we vidence of analytical and crie unfamiliar situations. Apply effections and critical is. Apply moderately effective organand of knowledge and of some analytical and critical is. Apply moderately effective organand of knowledge and skills recoherent and logical thinking,	es and logical thinking, wit, familiar and unfamiliar si and skills required for attatitical abilities and logical tective organizational and pskills required for attainin abilities and logical thinkin janizational and presentational and presentational and presentational university of the state of the s	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. If you most of the course g, and ability to apply onal skills. If the course learning and critical abilities	
Grade Descriptors	В	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents. Demonstrate substantial command the course learning outcomes. Shov apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations. Demonstrate partial but limited com outcomes. Show evidence of some Show limited ability to apply know	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective organization of some analytical and critical standard critical and skills recoherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent an	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. It is gmost of the course g, and ability to apply onal skills. Of the course learning I and critical abilities are organizational and g the course learning or no ability to apply on a point of the course learning or no ability to apply or no ability to apply or no ability to apply the course learning or no ability to apply and the course learning or no ability to apply the course or no abi	
	B C D	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents. Demonstrate substantial command the course learning outcomes. Sho apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations. Demonstrate partial but limited com- outcomes. Show evidence of some Show limited ability to apply know presentational skills. Demonstrate little or no evidence of outcomes. Lack of analytical and cri-	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective organization of some analytical and critical standard critical and skills recoherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent an	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. It is g most of the course g, and ability to apply onal skills. Of the course learning I and critical abilities re organizational and g the course learning or no ability to apply to a poly the course learning or no ability to apply the course or no ability to apply the	
Course Type	B C D	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents Demonstrate substantial command the course learning outcomes. Sho apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations Demonstrate partial but limited com outcomes. Show evidence of some Show limited ability to apply knowledge to most familiar situations Demonstrate jartial but limited com outcomes. Show evidence of some Show limited ability to apply knowledge ability. Demonstrate little or no evidence of outcomes. Lack of analytical and cri knowledge to solve problems. Organ	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective organization of some analytical and critical standard critical and skills recoherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent an	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. It is gmost of the course g, and ability to apply onal skills. Of the course learning I and critical abilities are organizational and g the course learning or no ability to apply on a point of the course learning or no ability to apply or no ability to apply or no ability to apply the course learning or no ability to apply and the course learning or no ability to apply the course or no abi	
Course Type	B C D Fail	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents. Demonstrate substantial command the course learning outcomes. Shor apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations. Demonstrate partial but limited communications. Show evidence of some Show limited ability to apply knowledge to apply knowledge to apply knowledge to solve problems. Organizational skills. Demonstrate little or no evidence of outcomes. Lack of analytical and ciknowledge to solve problems. Organizational skills.	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective or some analytical and critical strength of some analytical and coherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent and presentational skills	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply onal skills. of the course learning I and critical abilities re organizational and g the course learning or no ability to apply neffective.	
Course Type Course Teaching & Learning Activities	B C D Fail Lecture-t	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents. Demonstrate substantial command the course learning outcomes. Shor apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations. Demonstrate partial but limited commoutcomes. Show evidence of some Show limited ability to apply know presentational skills. Demonstrate little or no evidence of coutcomes. Lack of analytical and or knowledge to solve problems. Organizated course	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective or some analytical and critical strength of some analytical and coherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent and presentational skills	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hig	
Course Type	B C D Fail Lecture-t Activitie Lectures Tutorials	course learning outcomes. Show str thought, and ability to apply knowle effective organizational and presents. Demonstrate substantial command the course learning outcomes. Shor apply knowledge to familiar and som Demonstrate general but incomplet learning outcomes. Show evidence knowledge to most familiar situations. Demonstrate partial but limited commoutcomes. Show evidence of some Show limited ability to apply know presentational skills. Demonstrate little or no evidence of coutcomes. Lack of analytical and or knowledge to solve problems. Organizated course	ong analytical and critical abilititiogs to a wide range of complex ational skills. of a broad range of knowledge we vidence of analytical and crite unfamiliar situations. Apply effective or some analytical and critical strength of some analytical and coherent and logical thinking, ledge to solve problems. Apply of command of knowledge and tical abilities, logical and coherent and presentational skills	es and logical thinking, wit c, familiar and unfamiliar si and skills required for atta- itical abilities and logical the fective organizational and passibilities and logical thinkin panizational and presentation apuired for attaining some but with limited analytica y limited or barely effective skills required for attaining and the skills required for attaining skills required for attaining and the skills required for	th evidence of original truations. Apply highly hig	

	Assignments	Coursework (assignments, tutorials and a class test)	25
	Examination	One 2-hour written examination	75
Required/recommended reading and online materials	Higgins, James: Introduction to Modern Nonpar Hollander, M. and Wolfe, D.A.: Nonparametric Gibbons, J.D. and Chakraborti, S.: Nonparame Kvam, P.H. and Vidakovic, B.: Nonparametric (Wiley, 2007)	Statistical Methods, 2nd edition (Wiley tric Statistical Inference, 5th edition (C	, 1999) RC press, 2010)
Course Website	moodle.hku.hk		

STAT3621 Statistical data	analysis (6	credits)	Acader	mic Year	2014	
Offering Department	Statistics 8	& Actuarial Science	Quota		10	
Course Co-ordinator	Dr G Tian,	Statistics & Actuarial Science (gltian	@hku.hk)			
Teachers Involved	Dr G Tian,	Statistics & Actuarial Science				
Course Objectives	of the en hypothese important adequately	Building on prior coursework in statistical methods and modeling, students will get a deeper understandin of the entire process of data analysis. The course aims to develop skills of model selection and hypotheses formulation so that questions of interest can be properly formulated and answered. Ar important element deals with model review and improvement, when one's first attempt does no adequately fit the data. Students will learn how to explore the data, to build reliable models, and to communicate the results of data analysis to a variety of audiences.				
Course Contents & Topics	and two-sa variable so higher-way regression Real data	Descriptive statistics, presentation and visualization of data; Simple statistical analyses for the one-sam and two-sample case using parametric and nonparametric methods; Regression analyses: model fitti variable selection and model diagnostic checking; Analysis of Variance (ANOVA): 1-way, two-way a higher-way ANOVA; Covariance analysis; Categorical and count data: binary logistic regression, Poist regression. Real data sets will be presented for modelling and analysis using statistical software for gaining hands				
Course Learning Outcomes	experience					
	2. Summa measures, 3. Identify 4. Carry o selection,	On successful completion of the course, students should be able to: 1. Make good sense of the problem and identify what to measure for the question of interest, 2. Summarize and describe the quantitative and qualitative data using some simple appropriate statistic measures, 3. Identify the association among several continuous or discrete variables, 4. Carry out appropriate and comprehensive statistical analyses based on real life data including mode selection, perform model diagnostics, formulate testable hypotheses, make appropriate statistical inferences, make interpretations on the findings and report writing.				
Pre-requisites and Co-requisites and mpermissible combination)		Linear statistical analysis or STAT39 are strongly recommended to take \$			orior to taking thi	
Offer in 2014 - 2015	Y 2nd	sem	Examin	nation	May	
Offer in 2015 - 2016	Υ		'		'	
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical at knowledge to solve problems. Organization	ilities, logical and coherent thinking. Sh	now very little	or no ability to apply	
Course Type	Lecture-ba	ased course				
	Activities	•	Details		No. of Hour	
Course Teaching		•	Dotalio		3	
Course Teaching						
Course Teaching	Lectures					
Course Teaching	Lectures Tutorials	Self study			1	
Course Teaching & Learning Activities Assessment Methods	Lectures Tutorials	Self study	Details		10 Veighting in fina course grade (%	
Course Teaching & Learning Activities Assessment Methods and Weighting	Lectures Tutorials Reading	,	Details Coursework (assignments a class test)	C	1: 10 Veighting in fina	

Required/recommended reading and online materials	Ramsey, F. and Schafer, D. (2012). The Statistical Sleuth: A Course in Methods of Data Analysis, 3rd edition, Cengage Learning. Cody, R. (2011). SAS Statistics by Example. SAS Institute. Cody, R.P. & Smith, J.K. (2005). Applied Statistics and the SAS Programming Language, 5th edition, Pearson. Elliott, R.J. (2009). Learning SAS in the Computer Lab, 3rd edition, Cengage Learning. Kleinbaum, D.G., Kupper, L.L., Nizam, A. and Muller, K.E. (2007). Applied Regression Analysis and Other Multivariable Methods. 4th edition, Cengage Learning.
Course Website	moodle.hku.hk

STAT3799 Directed stu		atistics (o cicuits)		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota	30	
Course Co-ordinator	Prof S M	S Lee, Statistics & Actuarial Science (sms	slee @hku.hk)			
Teachers Involved	Various to	eachers as the assessors of oral presenta	tions and written reports,	Statistics & Actua	arial Science	
Course Objectives	To enhar skills.	o enhance students' knowledge of a particular topic and students' self-directed learning and critical thinking kills.				
Course Contents & Topics	member. be a criti	The student undertakes a self-managed study on a topic in statistics under the supervision of a staff nember. The topic is preferably one not sufficiently covered in the regular curriculum. The directed study can be a critical review or a synthesis of published work on the subject, or a laboratory or field study that would enhance students' understanding of the subject. The project may not require an element of originality.				
Course Learning Outcomes	On succe	essful completion of the course, students s	should be able to:			
outcomes	 Develor statistical Write s 	rst-hand experience in solving a research op skills in important technical tools, inclu research and data analyses. succinct reports on the findings of a resear concise oral presentation of the findings of	iding the use of computer ch study.			
Pre-requisites (and Co-requisites and Impermissible combination)	STAT6XX Pass in 1 Probabilit STAT160 STAT290 Not for st This caps	at least 24 credits of advanced level (XX) in the Major in Risk Management / Sta 8 credits from: STAT1601 Elementary states and statistics I, STAT2602 Probability 13 Introductory statistics, STAT2605 Introductory statistics; foundations of udents who have already enrolled in STA stone course is for Risk Management, a tor is required.	atistics; and fatistical methods, STAT16 and statistics II, STAT26 roduction to demographi factuarial science, STAT2 T4799 Statistics project in	602 Business stat 603 Data managic and socio-eco 2902 Financial ma this academic ye	istics, STAT260' ement with SAS nomic statistics, athematics; and ear.	
Offer in 2014 - 2015	N		1	Examination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
	A+ to F A	Demonstrate thorough grasp of the subject. Sho of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top Demonstrate substantial grasp of the subject. E	nalysis / evaluation of information e of data and results to draw apparal skills. [Work of A+ should stoic.]	on drawn from a full in propriate and insightfolion considerable add all abilities and logical	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use	
	A	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top	nalysis / evaluation of information of ordata and results to draw applial skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful comported use of data of results	on drawn from a full in propriate and insight from considerable add all abilities and logical comparisons between	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use different secondary	
Course Grade Grade Descriptors	A	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly.	nalysis / evaluation of informatic e of data and results to draw apial skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful concrect use of data of results. the subject. Evidence of some ees, showing ability to make comsome erroneous use of data an	on drawn from a full inpropriate and insightf- how considerable add all abilities and logical omparisons between to draw appropriate analytical and critical aparisons between diff	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use different secondary conclusions. Apply abilities and logical ferent interpretations	
	В	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. C effective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but	nalysis / evaluation of informatic e of data and results to draw apial skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful or correct use of data of results the subject. Evidence of some es, showing ability to make comsome erroneous use of data an resentational skills. Lention of some relevant informanalytical and critical abilities. Dana analysis and comparison. Lim	on drawn from a full inpropriate and insightfhow considerable add all abilities and logical omparisons between to draw appropriate analytical and critical aparisons between diffind results to draw appropriate of the subject demonstrate use and all the dability to use data.	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. . Evidence of some reference of several	
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Grade Descriptors	A B C D	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. Ceffective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but Apply moderately effective organizational and presentational stills. Demonstrate partial but limited grasp, with ret coherent and logical thinking, but with limited a sources, but mainly through summary rather tha appropriate conclusions. Apply limited or barely Demonstrate evidence of little or no grasp of the analytical and critical abilities, logical and coher of them. Misuse of data and results and/or unab	nalysis / evaluation of informatic e of data and results to draw apparal skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful or Correct use of data of results. The subject. Evidence of some es, showing ability to make comes, showing ability to make comes of data and error of some relevant informal analytical and critical abilities. Dan analysis and comparison. Limeffective organizational and presentations where the showledge and understanding ent thinking. Limited use of sect	on drawn from a full inpropriate and insight in work considerable additional and insight in a billities and logical omparisons between to draw appropriate analytical and critical aparisons between diffind results to draw appropriate to draw appro	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. Evidence of some reference of several a and results to draw nce of little or lack of o critical comparison	
Grade Descriptors Course Type Course Teaching	A B C D	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. Ceffective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but Apply moderately effective organizational and presentational skills becomes the properties of the pr	nalysis / evaluation of informatic e of data and results to draw apparal skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful or Correct use of data of results. The subject. Evidence of some es, showing ability to make comes, showing ability to make comes of data and error of some relevant informal analytical and critical abilities. Dan analysis and comparison. Limeffective organizational and presentations where the showledge and understanding ent thinking. Limited use of sect	on drawn from a full inpropriate and insight in work considerable additional and insight in a billities and logical omparisons between to draw appropriate analytical and critical aparisons between diffind results to draw appropriate to draw appro	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical used different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. Evidence of some reference of several a and results to draw noce of little or lack of presentational skills	
Grade Descriptors Course Type Course Teaching	B C D Fail Project-b Activitie	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. Ceffective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but Apply moderately effective organizational and presentational skills becomes the properties of the pr	nalysis / evaluation of informatic e of data and results to draw appaid skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful correct use of data of results the subject. Evidence of some es, showing ability to make comes, showing ability to make comes of data an resentational skills. Itention of some relevant informal analysis and comparison. Limeffective organizational and present thinking. Limited use of secole to draw appropriate conclusions.	on drawn from a full inpropriate and insightfhow considerable additional additional and insight and in	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical used different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. Evidence of some reference of several a and results to draw noce of little or lack of o critical comparisor presentational skills	
Course Type Course Teaching & Learning Activities Assessment Methods	B C D Fail Project-b Activitie	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. Geffective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but Apply moderately effective organizational and presentational skills. Demonstrate partial but limited grasp, with ret coherent and logical thinking, but with limited a sources, but mainly through summary rather that appropriate conclusions. Apply limited or barely. Demonstrate evidence of little or no grasp of the analytical and critical abilities, logical and coher of them. Misuse of data and results and/or unabare minimally effective or ineffective. assed course	nalysis / evaluation of informatic e of data and results to draw ap nal skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful correct use of data of results. The subject. Evidence of some res, showing ability to make com some erroneous use of data an resentational skills. The subject is evidence of some resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of second and present thinking. Limited use of second et on draw appropriate conclusions. The subject is evidence of some relevant information in the subject is evidence of second erroneous use of data an resentational skills. The subject is evidence of some erroneous use of second erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erroneous use of data an resentational skills.	on drawn from a full ippropriate and insightfhow considerable add all abilities and logical omparisons between to draw appropriate analytical and critical parisons between diffied results to draw appopriate use and nited ability to use data sentational skills. In of the subject. Evide ondary sources and nons. Organization and the defendance of the subject where the subject is to draw appopriate to use data sentational skills.	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical used different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. Evidence of some reference of several a and results to draw noce of little or lack of o critical comparison of presentational skills No. of Hours 120 /eighting in fina	
	B C D Fail Project-b Activitie Reading	of original thought. Insightful use and critical ar sources and to quote/reference aptly. Critical us highly effective organizational and presentation that is required in wider areas relevant to the top. Demonstrate substantial grasp of the subject. E of relevant information from sources, showing interpretations and to quote/reference aptly. Geffective organizational and presentational skills. Demonstrate general but incomplete grasp of thinking. Use of relevant information from source and to quote/reference aptly. Mostly correct but Apply moderately effective organizational and presentational skills. Demonstrate partial but limited grasp, with ret coherent and logical thinking, but with limited a sources, but mainly through summary rather that appropriate conclusions. Apply limited or barely. Demonstrate evidence of little or no grasp of the analytical and critical abilities, logical and coher of them. Misuse of data and results and/or unabare minimally effective or ineffective. assed course	nalysis / evaluation of informatic e of data and results to draw ap nal skills. [Work of A+ should stoic.] Evidence of analytical and critical ability to make meaningful correct use of data of results. The subject. Evidence of some res, showing ability to make com some erroneous use of data an resentational skills. The subject is evidence of some resentational skills. The subject is evidence of some resentational skills. The subject is evidence of some erroneous use of data an resentational skills. The subject is evidence of some erevant information analytical and critical abilities. Data an analysis and comparison. Lime effective organizational and preter is knowledge and understanding ent thinking. Limited use of seconde to draw appropriate conclusion. The subject is evidence of some relevant information analysis and comparison. Limited use of seconde to draw appropriate conclusion.	on drawn from a full ippropriate and insightfhow considerable addinates and logical omparisons between to draw appropriate analytical and critical operations between different analytical and critical operations and interest and interest ability to use data sentational skills. If the subject. Evide ondary sources and nons. Organization and ons. Organization and ons. Organization and the dent & the	range of high quality ul conclusions. Apply ditional work beyond thinking. Critical use different secondary conclusions. Apply abilities and logical ferent interpretations ropriate conclusions. Evidence of some reference of several a and results to draw nce of little or lack of o critical comparison	

STAT3901 Life contingen Offering Department		& Actuarial Science	Quota			
Course Co-ordinator						
Teachers Involved		Cheung, Statistics & Actuarial Science Cheung, Statistics & Actuarial Science	,			
Course Objectives				a full probabilistic		
oourse objectives	framework insurances developed	The major objectives of this course are to integrate life contingencies into a full probabilistic framework. The time-until-death random variable is the basic building block by which models for life insurances, designed to reduce the financial impact of the random event of untimely death, are developed. This course introduces the concepts of life contingencies and the basic mathematical skills for modelling life insurance products.				
Course Contents & Topics		s include: survival distributions; life to annuity models; benefit premiums; l	table functions; select and ultimate to benefit reserves.	ables; life insurance		
Course Learning Outcomes	On succes	sful completion of the course, studen	ts should be able to:			
	variables. 2. Define to variable us 3. Define parandom variables. 5. Calculations	 Define the continuous survival-time random variable that arises from the discrete survival-time randor variable using some assumptions for fractional ages. Define present-value-of-benefit random variables defined on survival-time random variables. Define and calculate the expected values, variances and probabilities for present-value-of-benefit random variables, present-value-of-loss-at-issue random variables, and present-value-of-loss random 				
Pre-requisites (and Co-requisites and (mpermissible combination)	(Pass in S in this cou	TAT2902 Financial mathematics and rse)) or	and STAT3615 Practical mathematics (Pass in STAT3902 Statistical model and STAT2902 Financial mathematics	s, or already enrolled		
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critical ab	nand of knowledge and skills required for atta ilities, logical and coherent thinking. Show very and presentational skills are minimally effective	little or no ability to apply		
Course Type	Lecture-ba	sed course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading /	Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in fina course grade (%)		
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25		
	Examinat	ion	One 3-hour written examination	75		
Required/recommended	Examination One 3-hour written examination 75 Bowers. N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. & Nesbitt, C.J.: Actuarial Mathematics (1997, 2nd edition), Itasca, Illinois: The Society of Actuaries Dickson, C.M.D., Hardy, M.R., and Waters, H.R.: Actuarial Mathematics for Life Contingent Risks					
reading and online materials	Dickson,		H.R.: Actuarial Mathematics for Li	e Contingent Risks		

STAT3902 Statistical mo	Academic Year	2014	
Offering Department	Offering Department Statistics & Actuarial Science		
Course Co-ordinator	Dr G Tian, Statistics & Actuarial Science (gltian@hku.hk)		
Teachers Involved	Teachers Involved Dr G Tian, Statistics & Actuarial Science		

Course Objectives	further stud hypothesis will be equ	This course is on the basis of 'STAT2901 Probability and Statistics: Foundation of Actuarial Science'. It will further study the concepts and methods of statistics. The course will lay emphasis on the estimation and hypothesis testing, the two major areas of statistical inference. Through the study of this course, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of data.			
Course Contents & Topics	Distribution and density of function of random variables; Order statistics, central limit theorem, Maximum likelihood estimator (MLE), moment estimator, Bayesian estimator, properties of estimators, limiting properties of MLE; Confidence interval estimations for normal mean, the difference of two normal means, normal variance, the ratio of two normal variances, and large-sample confidence intervals; Power function, Neyman-Pearson Lemma, likelihood ratio test, and goodness of fit test.				
Course Learning Outcomes	1. Understa point estima 2. Derive m 3. Locate p 4. Find te	On successful completion of the course, students should be able to: 1. Understand the importance of sufficient statistic(s) in data reduction and statistical inferences such as point estimation, confidence interval estimation, and testing hypothesis. 2. Derive maximum likelihood estimators of parameters to calculate maximum likelihood estimates. 3. Locate pivotal quantity to construct confidence intervals of parameters. 4. Find testing statistic to test hypotheses associated with one-sample and/or two-sample normal distributions with small sample sizes and non-normal distributions with large sample sizes.			
Pre-requisites (and Co-requisites and Impermissible combination)		AT2901 Probability and statistics: foun tuarial Science) students only.	dations of actuarial science; and		
Offer in 2014 - 2015	Y 1st s	em	Examination	n Dec	
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A	required for attaining all the ng, with evidence of original iliar situations. Apply highly			
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
		117	noderately effective organizational and pres		
	D	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to presentational skills.	nowledge and skills required for attaining at and logical thinking, but with limited and	sentational skills. some of the course learning alytical and critical abilities.	
	D Fail	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to	cnowledge and skills required for attaining to and logical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we	sentational skills. some of the course learning alytical and critical abilities. effective organizational and ttaining the course learning ry little or no ability to apply	
Course Type		Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical ability knowledge to solve problems. Organization are	cnowledge and skills required for attaining to and logical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we	sentational skills. some of the course learning alytical and critical abilities. effective organizational and ttaining the course learning ry little or no ability to apply	
Course Teaching	Fail	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to appresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course	cnowledge and skills required for attaining to and logical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we	sentational skills. some of the course learning alytical and critical abilities. effective organizational and ttaining the course learning ry little or no ability to apply	
Course Teaching	Fail Lecture-bas	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to appresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course	chowledge and skills required for attaining than dogical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we do presentational skills are minimally effections.	sentational skills. some of the course learning alytical and critical abilities. ffective organizational and ttaining the course learning ary little or no ability to apply we or ineffective.	
Course Teaching	Fail Lecture-base	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to appresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course	chowledge and skills required for attaining than dogical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we do presentational skills are minimally effections.	sentational skills. some of the course learning alytical and critical abilities. selfective organizational and ttaining the course learning ry little or no ability to apply ve or ineffective.	
Course Teaching	Fail Lecture-base Activities Lectures Tutorials	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to appresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course	chowledge and skills required for attaining than dogical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we do presentational skills are minimally effections.	sentational skills. some of the course learning alytical and critical abilities. effective organizational and ttaining the course learning and little or no ability to apply we or ineffective. No. of Hours 36	
•	Fail Lecture-base Activities Lectures Tutorials	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical ability knowledge to solve problems. Organization are seed course	chowledge and skills required for attaining than dogical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show we do presentational skills are minimally effections.	sentational skills. some of the course learning alytical and critical abilities. Iffective organizational and ttaining the course learning and little or no ability to apply we or ineffective. No. of Hours 36 12	
Course Teaching & Learning Activities	Fail Lecture-base Activities Lectures Tutorials Reading /	Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical ability knowledge to solve problems. Organization are sed course.	nowledge and skills required for attaining t and logical thinking, but with limited and solve problems. Apply limited or barely end of knowledge and skills required for a les, logical and coherent thinking. Show verify the presentational skills are minimally effection. Details	sentational skills. some of the course learning alytical and critical abilities. Iffective organizational and ttaining the course learning ary little or no ability to apply we or ineffective. No. of Hours 36 12 100 Weighting in final	
Course Teaching & Learning Activities	Fail Lecture-base Activities Lectures Tutorials Reading / Methods	Demonstrate partial but limited command of k outcomes. Show evidence of some coherents show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course.	nowledge and skills required for attaining than display the solve problems. Apply limited or barely conditions of the solve problems. Apply limited or barely conditions of the solve problems. Apply limited or barely conditions of the solve problems. Apply limited or barely conditions of the solve problems. Apply limited or barely conditions of the solve problems. Apply limited or barely conditions of the solve problems. Apply limited on the solve problems of the solve problems. Apply limited on the solve problems of the solve problems. Apply limited on the solve problems of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of the solve problems. Apply limited on the solve problems of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of the solve problems. Apply limited or barely conditions of the solve problems of th	sentational skills. some of the course learning alytical and critical abilities. Iffective organizational and ttaining the course learning ry little or no ability to apply ve or ineffective. No. of Hours 36 12 100 Weighting in final course grade (%)	
Course Teaching & Learning Activities	Fail Lecture-base Activities Lectures Tutorials Reading / Methods Assignment Examination Hogg R. V. 2005, 6th e Arnold S. F. Larsen R.	Demonstrate partial but limited command of k outcomes. Show evidence of some coheren Show limited ability to apply knowledge to presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization are seed course Self study Miller M.: John E. Freund's Mather al, 2004, 7th edition) " McKean J. W. & Craig A. T.: Introd	nowledge and skills required for attaining than display the solve problems. Apply limited or barely cond of knowledge and skills required for a les, logical and coherent thinking. Show we had presentational skills are minimally effective than the solve problems. Details Details Coursework (assignments, tutorials, and a class test) One 3-hour written examination matical Statistics with Application uction to Mathematical Statistics (all, 1990)	sentational skills. some of the course learning alytical and critical abilities. sffective organizational and ttaining the course learning and ttaining the course learning	

STAT3903 Stochastic mod	Academic Year	2014		
Offering Department	g Department Statistics & Actuarial Science			
Course Co-ordinator	Dr K S Chong, Statistics & Actuarial Science (kschong@hku.hk)			
Teachers Involved	Dr K S Chong, Statistics & Actuarial Science			
Course Objectives	This is an introductory course in probability modelling. A range of important topics in stochastic process will be discussed.			
Course Contents & Topics				

		e Black-Scholes option pricing formul cess, branching process and renewal p				
Course Learning Outcomes	On succes	ssful completion of the course, students	s should be able to:			
	 Apply the conditioning method to calculate the mean and probability. Understand the essentials of Markov chains, the Poisson process, and Brownian motion. Understand how stochastic models can be applied to the study of real-life phenomena. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S Not for st course; ar	For BSc(Actuarial Science) students only; and Pass in STAT2901 Probability and statistics: foundations of actuarial science; and Not for students who have passed in MATH3603 Probability theory, or have already enrolled in this course; and Not for students who have passed in STAT3603 Probability modelling, or have already enrolled in this				
Offer in 2014 - 2015	Y 2nd	I sem	Examination	May		
Offer in 2015 - 2016	Υ		·			
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcomes. Show strong anal	ced level of extensive knowledge and skills re lytical and critical abilities and logical thinking wide range of complex, familiar and unfamili ills.	, with evidence of original		
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	learning outcomes. Show evidence of some	and of knowledge and skills required for atta analytical and critical abilities and logical thi noderately effective organizational and preser	nking, and ability to apply		
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail		and of knowledge and skills required for attaties, logical and coherent thinking. Show very nd presentational skills are minimally effective	little or no ability to apply		
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25		
	Examinat	tion	One 3-hour written examination	75		
Required/recommended reading and online materials	S. M. Ros	s: Introduction to Probability Models (98	th edition)			
Course Website	moodle.hk					

STAT3904 Corporate finar	nce for actuarial science (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science	Quota			
Course Co-ordinator	Dr J K Woo, Statistics & Actuarial Science (jkwoo@hku.hk)				
Teachers Involved	Dr J K Woo, Statistics & Actuarial Science				
Course Objectives	This course is designed for actuarial science students to receive VE Actuaries. The objective of this course is to introduce students to th finance. The course will provide students with a systematic framewo and financing decisions for corporations.	e fundamental princi	iples of corporate		
Course Contents & Topics	The first part of the course will give an introduction to corporate fina topics covered in STAT2902 and STAT3615. These include: finanvalue and net present value, financial instruments and dividends de theory, binomial model and Black-Scholes option pricing formula. To no some important topics of corporate finance including: capital st leverage and firm value, market efficiency, risk and return, investr variance analysis, CAPM, long term financing, measures and p performance using various measures.	cial markets and con erivatives market, no the main part of the ructure and dividence ment decision using	mpanies; present l-arbitrage pricing course will focus d policy, financia Markowitz mean		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the factors to be considered by a company when dividend policy, and also the impact of financial leverage and long/s structure. 2. Calculate the value of bonds and stocks.				
	F04				

		financial performance using vario				
Pre-requisites (and Co-requisites and Impermissible combination)	[(Pass in ACCT1101 Introduction to accounting and STAT2902 Financial mathematics) or (Pass in STAT3610 Risk management and insurance and STAT3615 Practical mathematics for investment)]; and Not for students who have passed in FINA1310 Corporate finance, or have already enrolled in this course.					
Offer in 2014 - 2015	Y 2nd	Y 2nd sem Examination May				
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an a course learning outcomes. Show stror thought, and ability to apply knowledg effective organizational and presentation	ng analytical and critical abilities a e to a wide range of complex, fa	and logical thinking,	with evidence of original	
	В	Demonstrate substantial command of the course learning outcomes. Show apply knowledge to familiar and some	evidence of analytical and critica	I abilities and logica	I thinking, and ability to	
	С	Demonstrate general but incomplete learning outcomes. Show evidence of knowledge to most familiar situations.	some analytical and critical abili-	ties and logical think	ing, and ability to apply	
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of outcomes. Lack of analytical and critic knowledge to solve problems. Organiz	al abilities, logical and coherent tl	hinking. Show very li	ttle or no ability to apply	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study			100		
Assessment Methods and Weighting	Methods	• • • • • • • • • • • • • • • • • • •	Details		Weighting in final course grade (%)	
	Assignments		Coursework (ast tutorials, and a clas	signments, s test)	25	
	Examinat	tion	One 3-hour written	examination	75	
Required/recommended reading and online materials	Ross, S. A	A., Myers S. C. and Allen, F.: Pr A., Westerfield, R. W. and Jaffe, J er, D. G.: Investment Science (199	: Corporate Finance (2005		ition)	
Course Website	moodle.hl	ku.hk				

STAT3905 Introduction to	financial d	erivatives (6 credits)	Academic Year	2014		
Offering Department	Statistics 8	& Actuarial Science	Quota			
Course Co-ordinator	Dr E C K (Cheung, Statistics & Actuarial Science (eckc@hku.hk)				
Teachers Involved	Dr E C K (Cheung, Statistics & Actuarial Science				
Course Objectives		This course aims at providing an understanding of the fundamental concepts of financial derivatives. Emphases are on basic trading and hedging strategies, and the concept of no-arbitrage.				
Course Contents & Topics		Derivatives; short-selling; forward contracts; call options; put options; equity-linked CD; spreads and collars; hedging; financial forwards and futures; commodity swaps; interest rate swaps; put-call parity.				
Course Learning Outcomes	1. Define a 2. Evaluat swaps.	On successful completion of the course, students should be able to: 1. Define and recognize the definitions of terms commonly used in derivatives markets. 2. Evaluate the payoff and profit of basic derivative contracts, including forwards, futures, options, and swaps. 3. Explain how derivative securities can be used as tools to manage financial risk.				
Pre-requisites (and Co-requisites and Impermissible combination)	For BSc(A Not for st enrolled in	TAT2902 Financial mathematics; and ctuarial Science) students only; and udents who have passed in STAT4603 Derivatives and this course; and dents who have passed in FINA2322 Derivatives, or have	,	•		
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge a the course learning outcomes. Show evidence of analytical and criti				

		apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	learning outcomes. Show evidence of some	nand of knowledge and skills required for atta e analytical and critical abilities and logical thi moderately effective organizational and preser	and logical thinking, and ability to apply		
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
	Fail					
Course Type	Lecture-l	based course				
Course Teaching & Learning Activities	Activities		Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading / Self study			100		
Assessment Methods and Weighting	Method	Is	Details	Weighting in final course grade (%)		
	Assignments		Coursework (assignments, tutorials, and a class test)	25		
	Examination		One 2-hour written examination	75		
Required/recommended reading and online materials	McDonal	ld, R. L.: Derivatives Markets (Addison \	Wesley, 2006, 2nd edition), Chapters	1-5, 8.		
Course Website	moodle.h	nku.hk				

STAT3906 Risk theory I (6	credits)		Aca	ademic Year	2014	
Offering Department	Statistics	& Actuarial Science	Que	ota		
Course Co-ordinator	Dr K C C	neung, Statistics & Actuarial Science (kccg	g@hku.hk)			
Teachers Involved	Dr K C C	neung, Statistics & Actuarial Science				
Course Objectives		Risk theory is one of the main topics in actuarial science. Risk theory is the applications of statistical models and stochastic processes to insurance problems such as the premium calculation, ruin probability, etc.				
Course Contents & Topics		models; frequency models; collective ris; simulation.	sk models;coverage	modifications;	ruin theory; risk	
Course Learning Outcomes	Under expectati Estima amounts Calcula	On successful completion of the course, students should be able to: 1. Understand the individual risk model and the collective risk model, evaluate the distribution and expectation of the total claim amounts. 2. Estimate the premium of a policyholder and the total claim amounts using the information of the claim amounts made in previous years. 3. Calculate some commonly used risk measures and explain their use and limitation. 4. Apply simulation methods within the context of actuarial models.				
Pre-requisites and Co-requisites and mpermissible combination)		TAT3903 Stochastic models, or already e TAT3603 Probability modelling or MATH3		or		
Offer in 2014 - 2015	Y 2n	d sem	Exa	amination	May	
	Υ					
Offer in 2015 - 2016	Υ					
	Y A+ to F					
Course Grade		Demonstrate thorough mastery at an advanced course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills.	al and critical abilities and leading and leading and leading and critical abilities and leading and critical	ogical thinking, wit	h evidence of origina	
Course Grade	A+ to F	course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic	eal and critical abilities and le le range of complex, familia ange of knowledge and skill of analytical and critical abi	ogical thinking, wit r and unfamiliar si ls required for atta lities and logical ti	th evidence of original ituations. Apply highly sining at least most of hinking, and ability to	
Course Grade	A+ to F	course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills. Demonstrate substantial command of a broad r the course learning outcomes. Show evidence	al and critical abilities and le range of complex, familia ange of knowledge and skill of analytical and critical abi situations. Apply effective or of knowledge and skills realytical and critical abilities a	ogical thinking, wit r and unfamiliar si ls required for atta lities and logical ti rganizational and p quired for attaining and logical thinking	th evidence of original tuations. Apply highly aining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply	
Offer in 2015 - 2016 Course Grade Grade Descriptors	A+ to F A B	course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills. Demonstrate substantial command of a broad or the course learning outcomes. Show evidence apply knowledge to familiar and some unfamiliar. Demonstrate general but incomplete command learning outcomes. Show evidence of some and	al and critical abilities and in the range of complex, familial ange of knowledge and skill of analytical and critical abisituations. Apply effective or of knowledge and skills realytical and critical abilities alerately effective organizations. Wedge and skills required find logical thinking, but with	ogical thinking, wit r and unfamiliar si is required for atta lities and logical ti rganizational and p quired for attainin and logical thinkin nal and presentation or attaining some	th evidence of original truations. Apply highly training at least most of hinking, and ability to presentational skills. If you was to the course g, and ability to apply onal skills. If the course learning and critical abilities.	
Course Grade	A+ to F A B	course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills. Demonstrate substantial command of a broad r the course learning outcomes. Show evidence apply knowledge to familiar and some unfamiliar. Demonstrate general but incomplete command learning outcomes. Show evidence of some anknowledge to most familiar situations. Apply moductomes. Show evidence of some coherent a Show limited ability to apply knowledge to sol	al and critical abilities and I de range of complex, familia ange of knowledge and skill of analytical and critical abi situations. Apply effective or of knowledge and skills re altytical and critical abilities a lerately effective organizatio wledge and skills required found logical thinking, but with ve problems. Apply limited of knowledge and skills re, logical and coherent thinking.	ogical thinking, wit r and unfamiliar si is required for atta lities and logical ti rganizational and p quired for attainin and logical thinkin nal and presentation or attaining some in limited analytical or barely effectiv quired for attaining ng. Show very little	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply onal skills. of the course learning I and critical abilities. re organizational and g the course learning e or no ability to apply e or no ability to apply	
Course Grade	A+ to F A B C D	course learning outcomes. Show strong analytic thought, and ability to apply knowledge to a wic effective organizational and presentational skills. Demonstrate substantial command of a broad r the course learning outcomes. Show evidence apply knowledge to familiar and some unfamiliar. Demonstrate general but incomplete command learning outcomes. Show evidence of some an knowledge to most familiar situations. Apply moc outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to sol presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities	al and critical abilities and I de range of complex, familia ange of knowledge and skill of analytical and critical abi situations. Apply effective or of knowledge and skills re altytical and critical abilities a lerately effective organizatio wledge and skills required found logical thinking, but with ve problems. Apply limited of knowledge and skills re, logical and coherent thinking.	ogical thinking, wit r and unfamiliar si is required for atta lities and logical ti rganizational and p quired for attainin and logical thinkin nal and presentation or attaining some in limited analytical or barely effectiv quired for attaining ng. Show very little	th evidence of original truations. Apply highly hining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply onal skills. of the course learning I and critical abilities. re organizational and g the course learning e or no ability to apply e or no ability to apply	

	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments	Coursework (assignments, tutorials, and a class test)	25
	Examination	One 3-hour written examination	75
Required/recommended reading and online materials	Klugman S. A., Panjer H. H., & V Inc., 2012, 4th edition)	Villmot G. E.: Loss Models: From Data to Decisions	s (John Wiley & Sons,
Course Website	moodle.hku.hk		

	and forecas	sting (6 credits)	Academic Yea	r 2014		
Offering Department	Statistics 8	& Actuarial Science	Quota			
Course Co-ordinator	Prof Y Lan	n, Statistics & Actuarial Science (ylam@saas.hku	ı.hk)			
Teachers Involved	Prof Y Lan	n, Statistics & Actuarial Science				
Course Objectives		se deals with applied statistical methods of linea s through using linear models and time series an		s various forecasting		
Course Contents & Topics		n and multiple linear regression; predicting; g autoregressive, moving average, autoregressi g.				
Course Learning Outcomes	On succes	sful completion of the course, students should be	e able to:			
	 Do ANC Fit a get Identify Perform 	nple or multiple linear regression model to real da DVA analysis. neralized linear model to the real data. and fit a suitable AR, MA or ARMA model to real residual analysis. casting with these fitted models.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in ST For BSc(A Not for stu course; an Not for stu course; an	udents who have passed in STAT4601 Time-se d udents who have passed in ECON2280 Introduc	tistical analysis, or have a	eady enrolled in this		
Offer in 2014 - 2015	Y 2nd	sem	Examination	May		
Offer in 2015 - 2016	Υ		'			
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail					
		knowledge to solve problems. Organization and presentation				
Course Type	Lecture-ba	knowledge to solve problems. Organization and presentation are course				
Course Teaching	Lecture-ba	ased course				
Course Teaching		ased course		or ineffective.		
Course Teaching	Activities	ased course		No. of Hours		
Course Teaching	Activities Lectures Tutorials	ased course		No. of Hours		
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Activities Lectures Tutorials	ased course Details		No. of Hours		

	Examination	tutorials, and a class test) One 3-hour written examination	75
Required/recommended reading and online materials	edition) Abraham & J. Ledolter: Statistical Methods	netric Models and Economic Forecasts (McG s for Forecasting (John Wiley & Sons, 2005, 2 l: Time Series Analysis: Forecasting and Cor	nd edition)
Course Website	moodle.hku.hk		

Offering Department	.,	s distributions (6 credits) Academic Year	r 2014			
B Dopai amont	Statistics 8	& Actuarial Science Quota				
Course Co-ordinator	Dr K C Ch	eung, Statistics & Actuarial Science (kccg@hku.hk)				
Teachers Involved	Dr K C Ch	eung, Statistics & Actuarial Science				
Course Objectives	calculation a particula	is an example of a statistical estimate. The idea of credibility is very n. Insurance loss varies according to the business nature, what distribution ar loss is both of theoretical interest and practical importance. This cours and statistical methods.	should be used to fi			
Course Contents & Topics	estimation loss distri	uctuation approach; Buhlman's approach; Bayesian approach; empirica is; construction and selection of parametric models; properties and estimatic butions, determination of the acceptability of a fitted model; compariso of both discrete and continuous random variables.	n of failure time and			
Course Learning Outcomes	On succes	ssful completion of the course, students should be able to:				
	 Perform Apply B model. Apply construction Apply ending Construction 	Apply limited fluctuation (classical) credibility including criteria for both full and partial credibility. Perform Bayesian analysis using both discrete and continuous models. Apply Buhlmann and Buhlmann-Straub models and understand the relationship of these to the Bayesia model. Apply conjugate priors in Bayesian analysis and in particular the Poisson-gamma model. Apply empirical Bayesian methods in the nonparametric and semiparametric cases. Construct and select empirical models. To betermine the acceptability of a fitted model and/or compare models.				
Pre-requisites and Co-requisites and mpermissible combination)	Pass in S	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3906 Risk theory I				
Offer in 2014 - 2015	Y 1st	sem Examination	Dec			
Offer in 2015 - 2016	Υ	'				
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of					
	С	the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply				
	knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
		Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	D	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effect presentational skills.	ne of the course learning cal and critical abilities. ctive organizational and			
	Fail	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effective solve problems.	ne of the course learning cal and critical abilities. tive organizational and ning the course learning ittle or no ability to apply			
Course Type	Fail	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attair outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I	ne of the course learning cal and critical abilities. ctive organizational and ning the course learning ittle or no ability to apply			
Course Teaching	Fail	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attair outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of assed course	ne of the course learning cal and critical abilities. tive organizational and ning the course learning ittle or no ability to apply			
Course Teaching	Fail Lecture-ba	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attain outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of asset course	ne of the course learning cal and critical abilities. tive organizational and ning the course learning title or no ability to apply or ineffective.			
Course Teaching	Fail Lecture-ba	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attain outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of asset course	ne of the course learning cal and critical abilities. stive organizational and ming the course learning title or no ability to apply or ineffective. No. of Hours			
Course Teaching	Fail Lecture-ba Activities Lectures Tutorials	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attain outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of asset course	ne of the course learning cal and critical abilities citive organizational and ching the course learning title or no ability to apply or ineffective. No. of Hour 3			
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attair outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of assed course Details / Self study	ne of the course learning cal and critical abilities. tive organizational and sing the course learning title or no ability to apply or ineffective. No. of Hours			
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attain outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of ased course Details Details Coursework (assignments)	ne of the course learning cal and critical abilities stive organizational and sing the course learning title or no ability to apply or ineffective. No. of Hour 3 10 Weighting in fina course grade (%			
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Fail Lecture-ba Activities Lectures Tutorials Reading	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attain outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of assed course Details V Self study Details Coursework (assignments, tutorials, and a class test)	ne of the course learning cal and critical abilities. tive organizational and sing the course learning title or no ability to apply or ineffective. No. of Hours 100 Weighting in fina			
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-ba Activities Lectures Tutorials Reading Methods Assignme Examinat	outcomes. Show evidence of some coherent and logical thinking, but with limited analyti Show limited ability to apply knowledge to solve problems. Apply limited or barely effer presentational skills. Demonstrate little or no evidence of command of knowledge and skills required for attair outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very I knowledge to solve problems. Organization and presentational skills are minimally effective of assed course Details Details Coursework (assignments, tutorials, and a class test) One 3-hour written examination One 3-hour written One 3-hour	ne of the course learning cal and critical abilities. tive organizational and aning the course learning title or no ability to apply or ineffective. No. of Hours 30 10 Weighting in fina course grade (%			

STAT3909 Advanced life c					
Offering Department		& Actuarial Science		Quota	
Course Co-ordinator	Prof H L	Yang, Statistics & Actuarial Scie	nce (hlyang@hku.hk)		
Teachers Involved	Prof H L	Yang, Statistics & Actuarial Scie	nce		
Course Objectives	for Life Co	ctive of the course is to prepare contingencies (MLC) course of the anced theories of life contingencies.	e Society of Actuaries. En		
Course Contents & Topics	Loss-at-is	se is a continuation of the mater ssue random variable, Benefit pr r, Present value of cash flows, E	emium, Future loss rando	m variable, Benefit ı	
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. extend concepts presented for traditional life insurances and annuities to non-interest sensitive insurances. 2. model cash flows for basic Non-traditional life insurances and calculate contract level values. 3. model cash flows of basic Non-traditional life insurance and calculate the present values of the cash flows. 4. calculate benefit policy values for basic Non-traditional life insurances. 5. incorporate expenses in gross premium and calculate policy values based on the gross premium for life				
Pre-requisites	insurance Pass in S	s and annuities. TAT3901 Life contingencies, or	already enrolled in this co		oss premium for life
(and Co-requisites and Impermissible combination)	For BSc(A	For BSc(Actuarial Science) students only.			
Offer in 2014 - 2015	Y 2nd	d sem		Examination	May
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to				
	apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organizational and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	ased course			
Course Teaching	Activitie	s	Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading	/ Self study			100
Assessment Methods and Weighting	Methods	· •	Details		Weighting in fina
	Assignm	ents	Coursework (tutorials, and a co	(assignments,	25
	Examina	tion	One 3-hour writte	en examination	75
Required/recommended reading and online materials	Dickson,	N. L. et al.: Actuarial Mathematic C.M.D., Hardy, M.R. and Wige University Press, 2009)			Contingent Risks
and online materials		ue University Fress. Zuusi			

STAT3910 Financial ec	onomics I (6 credits)	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota		
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science (hlyang@hku.hk)			
Teachers Involved	Prof H L Yang, Statistics & Actuarial Science Dr J Song, Statistics & Actuarial Science			
Course Objectives	This course is a basic course on the derivative market. The c estimation, and Black-Scholes formula and its variations. T management ideas and methods. This course and STAT391	he course also includes	some basic risk	

	techniques	s needed for SoA Exam MFE.				
Course Contents & Topics	Option market; European and American options; conditional expectation and discrete-time martingale, discrete-time option-pricing theory; binomial model and its Greeks; true probabilities vs. risk-neutral probabilities; estimating volatility; the Black-Scholes formula; implied volatility; Greeks again; market making and hedging; exotic options.					
Course Learning Outcomes	On succes	ssful completion of the course, students	should be able to:			
	 Calculate option price using binomial tree. Understand the risk neutral probability. Understand basic probability theory, include probability space, random variable, conditional probability conditional expectation and discrete time martingale. Understand the Black-Scholes formula and its assumptions, the Greek letters, option elasticity, and implied volatility. Understand the hedging strategies and portfolio, market-maker risk, self-financing portfolio. Understand exotic options. 					
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.					
Offer in 2014 - 2015	Y 1st	sem	Examination	Dec		
Offer in 2015 - 2016	Υ	Y				
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)		
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25		
	Examinat	tion	One 3-hour written examination	75		
		Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 10-14 Lecture notes on conditional expectations and martingale				
Required/recommended reading and online materials	Lecture no		artingale			

STAT3911 Financial econo	omics II (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science	Quota			
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science (hlyang@hku.hk)				
Teachers Involved	Prof H L Yang, Statistics & Actuarial Science				
Course Objectives	This course is an advanced course on the option pricing theory. The course covers Black-Scholes equation and stochastic calculus, and interest models. This course and STAT3910 will cover all the concepts, principles and techniques needed for SoA Exam MFE.				
Course Contents & Topics	Brownian motion; introduction to stochastic calculus; arithmetic and geometric Brownian motion; It formula; Sharpe ratio and risk premium; Black-Scholes equation; risk-neutral stock-price process ar option pricing; option's elasticity and volatility; Vasicek, Cox-Ingersoll-Ross, and Black-Derman-Tomodels; delta-hedging for bonds and the Sharpe-ratio equality constraint; Black's model; options on ze coupon bonds; interest-rate caps and caplets.				
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand Brownian motion and its properties. 2. Understand the Ito calculus and Ito formula.				
	587				

	3. Understand the Black-Scholes model and option pricing theory. 4. Understand the delta hedging and some basic risk management methods. 5. Understand some basic interest rate models.					
Pre-requisites (and Co-requisites and Impermissible combination)		ATH3603 Probability theory of the State of State	or STAT3603 Probability m	odelling or STAT390	03 Stochastic models	
Offer in 2014 - 2015	Y 2nd	sem		Examination	May	
Offer in 2015 - 2016	Y					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	outcomes. Lack of analytical and	e of command of knowledge and critical abilities, logical and cohe ganization and presentational skill	rent thinking. Show very	little or no ability to apply	
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials	Tutorials			12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods	;	Details		Weighting in final course grade (%)	
	Assignme	ents	Coursework tutorials, and a	(assignments, class test)	25	
	Examinat	tion	One 3-hour wri	tten examination	75	
Required/recommended reading and online materials	John Hull: Alison Eth	McDonald: Derivatives Marke Options, Futures and Other leridge: A Course in Financia nreve: Stochastic Calculus for	Derivatives (2008, 7th edition I Calculus (2002)	on)		

STAT3951 Advanced conti	ngencies (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science				
Course Co-ordinator	Dr E C K Cheung, Statistics & Actuarial Science (eckc@hku.hk,				
Teachers Involved	Dr E C K Cheung, Statistics & Actuarial Science				
Course Objectives	This course serves as a continuation of STAT3909 and extendand actuarial techniques used in the field of life and non-life in course is a part of the requirement for the exemption from the and Institute of Actuaries, U.K.]	surance. [Students are	reminded that this		
Course Contents & Topics	Topic covers further analysis of the multiple state model; unit options; applications of actuarial techniques to a wide ranginsurance products and valuation of these products.				
Course Learning Outcomes	On successful completion of the course, students should be able 1. Value the cashflow contingent upon more than one risk. 2. Understand how to use multiple decrement tables to evaluate the none decrement. 3. Understand the equity linked insurance products, and the minsurance products. 4. Understand the Esscher transform and its application to optic 5. Value equity-linked death benefits.	uate expected cashflows			
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.				
Offer in 2014 - 2015	Y 1st sem	Examination	Dec		
Offer in 2015 - 2016	Υ				
Course Grade	A+ to F				

Grade Descriptors	A	Demonstrate thorough mastery at an advanc course learning outcomes. Show strong anal thought, and ability to apply knowledge to a effective organizational and presentational sk	lytical and critical abilities and logical thinking wide range of complex, familiar and unfamili	g, with evidence of original		
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Apply n	analytical and critical abilities and logical thi	inking, and ability to apply		
	D	Demonstrate partial but limited command of outcomes. Show evidence of some coherer Show limited ability to apply knowledge to presentational skills.	nt and logical thinking, but with limited analy	ytical and critical abilities.		
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems. Organization a	ties, logical and coherent thinking. Show very	little or no ability to apply		
Course Type	Lecture-b	ased course				
Course Teaching & Learning Activities	Activitie	s	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods	.	Details	Weighting in final course grade (%)		
	Assignments		Coursework (assignments, tutorials, and a class test)	25		
	Examination		One 3-hour written examination	75		
Required/recommended reading and online materials	Bowers, N. L. et al.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd ed.) Dickson, D. et al.: Actuarial Mathematics for Life Contingent Risks (Cambridge, 2010) CT5 Contingencies Core Technical Core Reading (Institute of Actuaries, 2010) Lecture note on equity linked insurance products.)		
Course Website	moodle.h	ku.hk				

STAT3952 Investment and	asset mar	nagement (6 credits)	Academic Year	2014	
Offering Department	Statistics	& Actuarial Science	Quota		
Course Co-ordinator	TBC, Stat	istics & Actuarial Science ()			
Teachers Involved	TBC, Stat	istics & Actuarial Science			
Course Objectives	commonly	objective of this course is to introduce students to so used in the management of an investment portfolio. E blems faced by insurance industry such as investment strent.	mphasis will be place	d on methods to	
Course Contents & Topics	actuarial	se provides an overview on the problems faced by a concepts to investment practice. This course will co- ent Process, Asset Allocation, Managing Fixed In- nent.	ver the following top	oics: Investment	
Course Learning Outcomes	1. Explain 2. Identify 3. Describ 4. Describ 5. Explain 6. Describ 7. Identify 8. Define 1 9. Apply 4 10. Select	how an investment policy and an investment strategy car the obligations of a fiduciary in managing investment portue how to select an investment strategy for an individual. The the particular issues influencing investment strategies for principles of risk-based capital management. The asset allocation strategies that can be used to construct and describe financial and non-financial risks faced by an irisk metrics to quantify major types of risk exposure. The sum of the establishment of investment policy are or build a benchmark for a given portfolio or portfolio mar tibe and assess performance measurement methodologies.	help manage risk. folios. or institutional investor an asset portfolio. entity. ad strategy. lagement style.		
Pre-requisites (and Co-requisites and Impermissible combination)	For BSc(A Not for st	TAT3901 Life contingencies; and actuarial Science) students only; and tudents who have passed in FINA2320 Investments are this course.	nd portfolio analysis,	or have alread	
Offer in 2014 - 2015	N		Examination		
Offer in 2015 - 2016	N			'	
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to				

		apply knowledge to familiar and some unfamil	liar situations. Apply effective organizational a	nd presentational skills.
	С	Demonstrate general but incomplete comma learning outcomes. Show evidence of some knowledge to most familiar situations. Apply n	analytical and critical abilities and logical thin	nking, and ability to apply
	D	Demonstrate partial but limited command of k outcomes. Show evidence of some coheren Show limited ability to apply knowledge to presentational skills.	t and logical thinking, but with limited analy	tical and critical abilities.
	Fail	Demonstrate little or no evidence of comma outcomes. Lack of analytical and critical abilit knowledge to solve problems. Organization at	ies, logical and coherent thinking. Show very	little or no ability to apply
Course Type	Lecture-ba	ased course		
Course Teaching & Learning Activities	Activities	S	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading / Self study			100
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Assignme	ents	Assignments, tutorials/example classes, group discussions, project and presentation	50
	Examinat	tion	One 2-hour written examination	50
Required/recommended reading and online materials	Z. Bodie, A Crouhy, G F. J. Fabo	& F. J. Fabozzi: Investment Manageme A. Kane, & A. Marcus: Investments (Mo ialai, & Mark: Risk Management (2001) zzi: Handbook of Fixed Income Securit Modern Investment Management: An I	:Graw-Hill, 2005, 7th edition) ies (McGraw-Hill, 2005, 7th edition)	Assoc., 1999)
Course Website	moodle.hk	ku.hk		
Additional Course Information	A Dynamic	erences: J. L. Maginn, D.L. Tuttle, J.E. l c Process (Wiley, 2007, 3rd edition) sset / Liability Management of Financial	, , ,	Investment Portfolios,

STAT3953 Fundamentals o	of actuarial	practice (6 credits)	Academic Year	2014	
Offering Department	Statistics &	Actuarial Science	Quota		
Course Co-ordinator	Dr L F K N	g, Statistics & Actuarial Science (flouisng@hku.hk)			
Teachers Involved	Dr L F K N	g, Statistics & Actuarial Science			
Course Objectives		This course teaches students about the business environment and exposes them to practical real-wo situations using the actuarial control cycle as a framework.			
Course Contents & Topics	Professional Solutions.	e provides an overview on selected materials related Actuary, External Forces, Risk in Actuarial Proces, Emphasis will be placed on applications to various if e insurance, group insurance, social security plans casualty insurance.	oblems, Design and P s financial security prog	ricing of Actuaria grammes including	
	 Provide introductory description of financial security systems, common actuarial techniques practical experiences. Describe actuarial practices, principles, approaches, methods, commonalities, problems and solution sexual practices across the traditional areas of practice. Explain actuarial practices as applied directly on behalf of financial security system providers or a consultant to those providers. Apply actuarial skills in nontraditional and emerging areas of practice. Provide context for the specific mathematical and technical skills developed in the basic actual courses. 				
	3. Explain a4. Explain consultant5. Apply ac6. Provide courses.	actuarial practices across the traditional areas of prac actuarial practices as applied directly on behalf of f to those providers. tuarial skills in nontraditional and emerging areas of p	tice. inancial security system practice. al skills developed in t	n providers or as	
Pre-requisites (and Co-requisites and Impermissible combination)	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST	actuarial practices across the traditional areas of pract actuarial practices as applied directly on behalf of foot those providers, tuarial skills in nontraditional and emerging areas of process of the specific mathematical and technic	tice. inancial security system practice. al skills developed in t	n providers or as	
(and Co-requisites and mpermissible combination)	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST	actuarial practices across the traditional areas of practice actuarial practices as applied directly on behalf of foot those providers. Ituarial skills in nontraditional and emerging areas of proceedings of the specific mathematical and technical for the professional role as an Associate of the Society AT3909 Advanced life contingencies; and extuarial Science) students only.	tice. inancial security system practice. al skills developed in t	n providers or as	
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST For BSc(Ac	actuarial practices across the traditional areas of practice actuarial practices as applied directly on behalf of foot those providers. Ituarial skills in nontraditional and emerging areas of proceedings of the specific mathematical and technical for the professional role as an Associate of the Society AT3909 Advanced life contingencies; and extuarial Science) students only.	tice. inancial security system practice. al skills developed in t ty of Actuaries.	n providers or as	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST For BSc(Ac	actuarial practices across the traditional areas of practice actuarial practices as applied directly on behalf of foot those providers. Ituarial skills in nontraditional and emerging areas of proceedings of the specific mathematical and technical for the professional role as an Associate of the Society AT3909 Advanced life contingencies; and extuarial Science) students only.	tice. inancial security system practice. al skills developed in t ty of Actuaries.	n providers or as	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST For BSc(Ac Y 1st s	actuarial practices across the traditional areas of practice actuarial practices as applied directly on behalf of foot those providers. Ituarial skills in nontraditional and emerging areas of proceedings of the specific mathematical and technical for the professional role as an Associate of the Society AT3909 Advanced life contingencies; and extuarial Science) students only.	tice. inancial security system practice. al skills developed in t ty of Actuaries. Examination we knowledge and skills requi- bilities and logical thinking, we	n providers or as the basic actuariate. No Exam	
(and Co-requisites and	3. Explain a 4. Explain consultant 5. Apply ac 6. Provide courses. 7. Prepare Pass in ST For BSc(Ac Y 1st s Y A+ to F	actuarial practices across the traditional areas of pracactuarial practices as applied directly on behalf of foot those providers. Ituarial skills in nontraditional and emerging areas of a context for the specific mathematical and technic for the professional role as an Associate of the Societa AT3909 Advanced life contingencies; and actuarial Science) students only. Demonstrate thorough mastery at an advanced level of extensions course learning outcomes. Show strong analytical and critical atthought, and ability to apply knowledge to a wide range of comparison.	tice. inancial security system practice. al skills developed in t ty of Actuaries. Examination We knowledge and skills requi- bilities and logical thinking, w plex, familiar and unfamiliar and dege and skills required for att d critical abilities and logical	n providers or as the basic actuariate. No Exam No Exam Ired for attaining all the evidence of original situations. Apply highly taining at least most of thinking, and ability to thinking, and ability to the existence of the	

		knowledge to most familiar situations	. Apply moderately effective organizational a	and presentational skills.	
	D	outcomes. Show evidence of some	nand of knowledge and skills required for at coherent and logical thinking, but with limedge to solve problems. Apply limited or	nited analytical and critical abilities.	
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the coutcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no knowledge to solve problems. Organizational and presentational skills are minimally effective or ineffe			
Course Type	Lecture-b	pased course			
Course Teaching & Learning Activities	Activitie	es	Details	No. of Hours	
& Learning Activities	Lectures	3		36	
	Project work			12	
	Reading / Self study			100	
Assessment Methods and Weighting	Methods	S	Details	Weighting in final course grade (%)	
	Presenta	ation	oral presentation	25	
	Project r	eports	written report	50	
	Test		in-class quizzes	25	
Required/recommended reading and online materials	Klugman, S.: Understanding Actuarial Practice (Society of Actuaries, 2012) Bellis, C., Klugman, S., Shepherd, J., and Lyon, R.: Understanding Actuarial Management: The Actuarial Control Cycle (Institute of Actuaries of Australia, 2010, 2nd ed.) Brown, R.L. and Gottlieb, L.R.: Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance (ACTEX Publications, Inc., 2007, 3rd ed.) Segal, S.: Corporate Value of Enterprise Risk Management: The Next Step in Business Management (Wiley, 2011)				
Course Website	moodle.h	ku.hk			

STAT3954 Current topics	s in actuar	al science (6 credits)	Α	cademic Year	2014
Offering Department	Statistics &	Actuarial Science	Q	uota	
Course Co-ordinator	Prof W K Li	Statistics & Actuarial Science (hrntlwk@hku.l	hk)		
Teachers Involved		am, Mr Fred Choi & Mr Henry Cheung, Statistiong, Statistics & Actuarial Science	tics & Actuarial Scien	се	
Course Objectives	the basic ca	aims at providing practical elements for actua pability to understand, research in and handle tudents in their coming future career.			
Course Contents & Topics	Actuaries' L For Practic Insurance, Reporting a Pricing and For Actuari echoing ch stimulating would dom	covers a full range of topics related to both a egal Thinking. I Actuarial Practice: It covers the major pract to covers the full picture of actuarial control on Experience Analysis. For General Insurar Valuation. Is' Legal Thinking: This is the 7th year of the anges in the market for basic legal and grecent legal materials with heavy involvementate the course, alongside with basic legal rese from guests from the General Insurance India.	ctical topics in both L cycle including Prod nce, it covers the base e course and the ful general insurance s not of actuarial and of esearch skills and fur	ife and Casualty uct Pricing, Validackbone areas in a start of a new kills for actuariether general instituted and the start and amental legal start of the start	r areas. For L lation, Financ licluding Produ course structu s. Intellectual lirance experti hinking. Shari
Course Learning Outcomes	1. Have a Insurance. 2. Possess 3. Possess 4. Possess 5. Possess 6. Conduct	ful completion of the course, students should be asic understanding regarding Actuarial Controverse experience regarding fundamental actual pasic understanding of the legal system in Houndamental knowledge in certain core legal a undamental knowledge of the law of insurance elementary legal researches when facing with and the basic elements of a routine judgment, the	rol Cycle from A to 2 arial practice through ang Kong. aspects such as the late. ilegal problems.	n practical projec	t. nd the law of to
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in ST	AT3901 Life contingencies, or already enrolled T3909 Advanced life contingencies, or alread uarial Science) students only.		urse); and	
Offer in 2014 - 2015	N		E	xamination	
Offer in 2015 - 2016	N		·		
Course Grade	A+ to F				
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level course learning outcomes. Show strong analytical and thought, and ability to apply knowledge to a wide ran effective organizational and presentational skills.	d critical abilities and log	ical thinking, with e	vidence of origin

	В	course learning outcomes. Show evidence	oad range of knowledge and skills required for atta of analytical and critical abilities and logical thir ituations. Apply effective organizational and presen	nking, and ability to apply
	С	outcomes. Show evidence of some analytic	and of knowledge and skills required for attaining n aal and critical abilities and logical thinking, and ab ffective organizational and presentational skills.	
	D	outcomes. Show evidence of some cohere	of knowledge and skills required for attaining sor nt and logical thinking, but with limited analytical problems. Apply limited or barely effective organiz	and critical abilities. Show
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course lea outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.		
Course Type	Lecture-b	ased course		
Course Teaching	Activitie	S	Details	No. of Hours
& Learning Activities	Lectures			36
	Tutorials			12
	Reading	/ Self study		100
Assessment Methods and Weighting	Method		Details	Weighting in final course grade (%)
	Assignm	ents	Coursework (assignments, practical project & class test(s))	100
Course Website	moodle.h	ku.hk		

STAT3955 Survival analys	sis (6 credi	ts)	Academic Year	2014	
Offering Department	Statistics	& Actuarial Science	Quota		
Course Co-ordinator	Dr E K F	Lam, Statistics & Actuarial Science (hrntlkf@hku.hk)			
Teachers Involved	Dr E K F	Lam, Statistics & Actuarial Science			
Course Objectives	This course is concerned with how models which predict the survival pattern of humans or other entiti are established. This exercise is sometimes referred to as survival-model construction.				
Course Contents & Topics	covered if function; parametric estimator and comp	re and properties of parametric and nonparametric survivinclude: the introduction of some important basic quantitic some commonly used parametric survival models; cortic estimation of the survival distribution by maximum likeling of the survival functions from possibly censored satisfies the Nelson-Aalen estimator; and the kernel density estimaters of the independent survival functions by means of the nodels; Cox's semiparametric proportional hazards registrates.	es like the hazard fund neepts of censoring a hood estimation metho mples by means of t imator or the Ramlau-l the generalized log-ran	ction and surviva ind/or truncation od; nonparametri he Kaplan-Meier Hansen estimato ik test; parametri	
Course Learning Outcomes	1. Acquire	essful completion of the course, students should be able to e a clear understanding of the nature of failure time data of death and life. Im estimation for some commonly used survival mode tims.	or survival data, a ger		
	3. Analyz	e survival data using the Cox's semiparametric proportion the Cox's model to a multivariate setup to accommodate		ata.	
(and Co-requisites and	3. Analyz 4. Extend Pass in S		multivariate survival da	ata.	
and Co-requisites and mpermissible combination)	3. Analyz 4. Extend Pass in S Pass in S	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this co	multivariate survival da	May	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	3. Analyz 4. Extend Pass in S Pass in S	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this cosTAT3600 Linear statistical analysis or STAT3901 Life cor	multivariate survival da urse; or ntingencies		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	3. Analyz 4. Extend Pass in S Pass in S	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this cosTAT3600 Linear statistical analysis or STAT3901 Life cor	multivariate survival da urse; or ntingencies		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Analyz 4. Extend Pass in S Pass in S Y 2nd Y	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this cosTAT3600 Linear statistical analysis or STAT3901 Life cor	multivariate survival daurse; or ntingencies Examination knowledge and skills require lies and logical thinking, with	May d for attaining all the nevidence of original	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Analyz 4. Extend Pass in S Pass in S Y 2nd Y A+ to F	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this costAT3600 Linear statistical analysis or STAT3901 Life cord sem Demonstrate thorough mastery at an advanced level of extensive known course learning outcomes. Show strong analytical and critical abilit thought, and ability to apply knowledge to a wide range of complexity.	multivariate survival da urse; or tiingencies Examination knowledge and skills require ies and logical thinking, with x, familiar and unfamiliar sit and skills required for attai ritical abilities and logical th	May d for attaining all the nevidence of original uations. Apply highly ning at least most of inking, and ability to	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Analyz 4. Extend Pass in S Pass in S Y A+ to F	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this costAT3600 Linear statistical analysis or STAT3901 Life conditions of the set of the	multivariate survival da urse; or ntingencies Examination Examinatio	May Independent of the providence of original unations. Apply highly the providence of original unations. Apply highly the province of the course of the co	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	3. Analyz 4. Extend Pass in S Pass in S Y 2nd Y A+ to F A B	I the Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this cost TAT3600 Linear statistical analysis or STAT3901 Life cord discrete setup. Demonstrate thorough mastery at an advanced level of extensive k course learning outcomes. Show strong analytical and critical ability thought, and ability to apply knowledge to a wide range of complete effective organizational and presentational skills. Demonstrate substantial command of a broad range of knowledge the course learning outcomes. Show evidence of analytical and critical planting in the course learning outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes. Show evidence of some analytical and critical planting outcomes.	multivariate survival da urse; or tiingencies Examination Knowledge and skills require ies and logical thinking, with x, familiar and unfamiliar sit rand skills required for attainitical abilities and logical thiftective organizational and presentatio equired for attaining applicational and presentatio equired for attaining some of but with limited analytical	May In d for attaining all the nevidence of original uations. Apply highly ning at least most of inking, and ability to resentational skills. If most of the course, and ability to apply nal skills. If the course learning and critical abilities.	
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	3. Analyz 4. Extend Pass in S Pass in S Y A+ to F A B C	The Cox's model to a multivariate setup to accommodate STAT3902 Statistical models, or already enrolled in this costa tatistical analysis or STAT3901 Life cord as models. The cord of the course learning outcomes. Show strong analytical and critical abilities thought, and ability to apply knowledge to a wide range of complete fective organizational and presentational skills. Demonstrate substantial command of a broad range of knowledge the course learning outcomes. Show evidence of analytical and critical apply knowledge to familiar and some unfamiliar situations. Apply elearning outcomes. Show evidence of some analytical and critical knowledge to most familiar situations. Apply moderately effective organizations. Show evidence of some coherent and logical thinking. Show limited ability to apply knowledge to solve problems. Appl	multivariate survival da urse; or tiingencies Examination Examinatio	May In the newidence of original uations. Apply highly uning at least most of inking, and ability to resentational skills. I most of the course, and ability to apply nal skills. If the course learning and critical abilities, a organizational and the course learning or no ability to apply the new area.	

Course Teaching & Learning Activities	Activities	Details	No. of Hours	
& Learning Activities	Lectures		36	
	Tutorials		12	
	Reading / Self study		100	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	
	Assignments	Coursework (assignments, tutorials, and a class test)	25	
	Examination	One 3-hour written examination	75	
Required/recommended reading and online materials	Cox, D. R. and Oakes, D.: Analysis of Survival Data (Chapman and Hall, 1984) Hosmer, D. W. and Lemeshow, S.: Applied Survival Analysis: Regression Modeling of Time to Event Da (Wiley, 1999) Klein, J. P. and Moeschberger, M. L.: Survival Analysis: Techniques for Censored and Truncated Da (Springer Verlag, New York, 2005, 2nd ed.)			
Course Website	moodle.hku.hk			

STAT3956 Pension funds	and pension	on mathematics (6 credits)		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Prof G Ma	a, Statistics & Actuarial Science (gr	na328@hku.hk)			
Teachers Involved	Prof G Ma	a, Statistics & Actuarial Science				
Course Objectives	fundamer	This course covers the basics of pension plan design and pension fund management, as well as t fundamentals of pension plan valuations using different actuarial cost methods. The students will introduced to the application of actuarial valuation techniques to the funding and accounting of pensi plans.				
Course Contents & Topics	pension of	The following topics will be covered: Fundamentals of private pension plans; pricing and valuation of pension obligations; actuarial cost methods and their effects on cost patterns; selection of actuarial assumptions; principles of asset and liability management.				
Course Learning Outcomes	1. Calcula 2. Calcula 3. Perform 4. Select 5. Interpre	ssful completion of the course, students the pension benefits in accordante the normal cost and actuarial lian gain and loss analyses for pensionappropriate assumptions and methet the valuation results presented in the trand the principles of asset and lial	nce with the provisions of bilities using different act n valuations. ods for funding or accour actuarial valuation repor	uarial cost methods nting purposes. rts.	5.	
Pre-requisites (and Co-requisites and mpermissible combination)	Pass in S	TAT3909 Advanced life contingend	ies			
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an ac course learning outcomes. Show strong thought, and ability to apply knowledge effective organizational and presentation	analytical and critical abilities to a wide range of complex, f	and logical thinking, wi	th evidence of origina	
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited commar outcomes. Show evidence of some co Show limited ability to apply knowledg presentational skills.	herent and logical thinking, bu	ut with limited analytica	l and critical abilities	
	Fail	Demonstrate little or no evidence of coutcomes. Lack of analytical and critical knowledge to solve problems. Organizati	abilities, logical and coherent	thinking. Show very little	e or no ability to apply	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	es	Details		No. of Hour	
Learning Activities	Lectures				3	
	Tutorials				1	
		/ Self study			10	
Assessment Methods and Weighting	Methods	•	Details		Weighting in fina	
	Assignm	ents	Coursework (as tutorials, and a cla	ssignments,	2	

	Examination	One 3-hour written examination	75
Required/recommended reading and online materials	Arthur W. Anderson: Pension Mathematics for Ac McGill, D.M., Brown, K.N., Haley, J.J., Schieb Edition) William H. Aitken: Problem-Solving Approach to F Morneau Sobeco: Handbook of Canadian Pensio Actuarial Standard of Practice No. 27, Selecti Obligations Actuarial Standard of Practice No. 35, Selection of Measuring Pension Obligations Actuarial Standard of Practice No. 44, Selecti Valuations David Farber, ASA, EA, MSPA, William Farrimol Actuarial Cost Methods-A Review, 3rd Edition, 19 2001 Supplement to Actuarial Cost Methods-A Review, 3rd Edition, 19	Pension Funding and Valuation, (2nd n & Benefit Plans (2008, 14th Edition of Economic Assumptions for Demographic and Other Nonecon and Use of Asset Valuation Mand, FSPA, Duane Mayer, MSPA, Glogo, ACTEX Publications	d edition). n) Measuring Pension omic Assumptions for Methods for Pension
Course Website	moodle.hku.hk		

		edits)		Academic Year	2014	
Offering Department	Statistics 8	Actuarial Science		Quota		
Course Co-ordinator	Dr G Li, St	atistics & Actuarial Science (gdli@hku.i	hk)			
Teachers Involved	Dr G Li, St	atistics & Actuarial Science				
Course Objectives	naturally i observatio this. This processes	A time series consists of a set of observations on a random variable taken over time. Time series aris naturally in climatology, economics, environment studies, finance and many other disciplines. The observations in a time series are usually correlated; the course establishes a framework to discus this. This course distinguishes different type of time series, investigates various representations for th processes and studies the relative merits of different forecasting procedures. Students will analyse reatime-series data on the computer.				
Course Contents & Topics		Stationarity and the autocorrelation functions; linear stationary models; linear non-stationary modes; model identification; estimation and diagnostic checking; seasonal models and forecasting methods for time series.				
Course Learning Outcomes	1. Recogni 2. Underst MA (movin 3. Transfor 4. Identify 5. Fit a su necessary 6. Perform	On successful completion of the course, students should be able to: 1. Recognize a stationary vs non-stationary time series. 2. Understand some basic properties of commonly used time series models such as AR (autoregressive), MA (moving average) and ARMA models. 3. Transform non-stationary time series into stationary ones. 4. Identify different time series models based on autocorrelation functions. 5. Fit a suitable AR, MA or ARMA model to real data using SAS (after transforming to stationarity if necessary). 6. Perform goodness of fit tests for such models. 7. Do forecasting with these fitted time series models.				
Pre-requisites (and Co-requisites and mpermissible combination)	Not for stu course; an Not for stu	Pass in STAT3600 Linear statistical analysis; and Not for students who have passed in STAT3614 Business forecasting, or have already enrolled in this course; and Not for students who have passed in STAT3907 Linear models and forecasting, or have already enrolle in this course.				
Offer in 2014 - 2015	V 1ct					
Olici III 2014 - 2013	1 1513				Dec	
	Υ 1513	SEIII		Examination	Dec	
Offer in 2015 - 2016		SEIII		Examination	Dec	
Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Υ	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil	rtical and critical abilities a wide range of complex, fa	vledge and skills require	d for attaining all the evidence of original	
Offer in 2015 - 2016 Course Grade	Y A+ to F	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a v	rtical and critical abilities a wide range of complex, fa lls. d range of knowledge and the of analytical and critical	vledge and skills required and logical thinking, with miliar and unfamiliar situ d skills required for attair al abilities and logical thi	d for attaining all the evidence of original uations. Apply highly ning at least most of inking, and ability to	
Offer in 2015 - 2016 Course Grade	Y A+ to F	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence	rtical and critical abilities a wide range of complex, fa lls. d range of knowledge and se of analytical and critical ar situations. Apply effect and of knowledge and ski analytical and critical abili	vledge and skills required and logical thinking, with miliar and unfamiliar situ d skills required for attain il abilities and logical thi ive organizational and pr lls required for attaining ties and logical thinking,	d for attaining all the evidence of original uations. Apply highly hing at least most of inking, and ability to esentational skills. most of the course, and ability to apply	
Offer in 2015 - 2016 Course Grade	Y A+ to F A B	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence apply knowledge to familiar and some unfamili Demonstrate general but incomplete commal learning outcomes. Show evidence of some a	rtical and critical abilities a wide range of complex, fa lls. If range of knowledge and see of analytical and critical artical artical artical artical and critical and critical and critical ability of the condenately effective organional artical ability of the critical and critical ability of contract and critical and critical and critical and critical ability of critical and critical a	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking, actional and presentation and presentation and increase and logical thinking, actional and presentation and the with limited analytical and logical thinking.	d for attaining all the evidence of original uations. Apply highly ning at least most of inking, and ability to esentational skills. most of the course, and ability to apply nal skills. If the course learning and critical abilities.	
Offer in 2015 - 2016 Course Grade	Y A+ to F A B C	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broat the course learning outcomes. Show evidence apply knowledge to familiar and some unfamili Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to see the course of the control of the course of the co	rtical and critical abilities a wide range of complex, falls. If range of knowledge and se of analytical and critical arise at tuations. Apply effect and of knowledge and skil analytical and critical abilition of the second o	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original uations. Apply highly hing at least most of inking, and ability to esentational skills. most of the course, and ability to apply hal skills. If the course learning and critical abilities, organizational and the course learning or no ability to apply or no ability to apply	
Offer in 2015 - 2016 Course Grade Grade Descriptors	Y A+ to F A B C D	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidenciapply knowledge to familiar and some unfamiliar Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to spresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abiliti	rtical and critical abilities a wide range of complex, falls. If range of knowledge and se of analytical and critical arise at tuations. Apply effect and of knowledge and skil analytical and critical abilition of the second o	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original uations. Apply highly hing at least most of inking, and ability to esentational skills. most of the course, and ability to apply hal skills. If the course learning and critical abilities, organizational and the course learning or no ability to apply or no ability to apply	
Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	Y A+ to F A B C D	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence apply knowledge to familiar and some unfamilial Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to spresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization and seed course	rtical and critical abilities a wide range of complex, falls. If range of knowledge and se of analytical and critical arise at tuations. Apply effect and of knowledge and skil analytical and critical abilition of the second o	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original uations. Apply highly hing at least most of inking, and ability to esentational skills. most of the course, and ability to apply hal skills. If the course learning and critical abilities, organizational and the course learning or no ability to apply or no ability to apply	
Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	Y A+ to F A B C D Fail	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence apply knowledge to familiar and some unfamilial Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to spresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization and seed course	rtical and critical abilities a wide range of complex, falls. If range of knowledge and see of analytical and critical arise attentions. Apply effect and of knowledge and skills loaderately effective organical and logical thinking, but solve problems. Apply limited of knowledge and skills requited and logical thinking, but solve problems. Apply limited of knowledge and skills are logical and coherent to the presentational skills are	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original pations. Apply highly ming at least most of inking, and ability to esentational skills. most of the course, and ability to apply hal skills. If the course learning and critical abilities organizational and the course learning or no ability to apply effective. No. of Hours	
Offer in 2015 - 2016 Course Grade Grade Descriptors Course Type Course Teaching	Y A+ to F A B C D Fail Lecture-ba Activities	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence apply knowledge to familiar and some unfamilial Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to spresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization and seed course	rtical and critical abilities a wide range of complex, falls. If range of knowledge and see of analytical and critical arise attentions. Apply effect and of knowledge and skills loaderately effective organical and logical thinking, but solve problems. Apply limited of knowledge and skills requited and logical thinking, but solve problems. Apply limited of knowledge and skills are logical and coherent to the presentational skills are	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original uations. Apply highly hing at least most of inking, and ability to esentational skills. most of the course, and ability to apply hal skills. If the course learning and critical abilities, organizational and the course learning or no ability to apply effective.	
Offer in 2015 - 2016 Course Grade	Y A+ to F A B C D Fail Lecture-ba Activities Lectures Tutorials	Demonstrate thorough mastery at an advance course learning outcomes. Show strong analy thought, and ability to apply knowledge to a veffective organizational and presentational skil Demonstrate substantial command of a broad the course learning outcomes. Show evidence apply knowledge to familiar and some unfamilial Demonstrate general but incomplete comman learning outcomes. Show evidence of some a knowledge to most familiar situations. Apply m Demonstrate partial but limited command of k outcomes. Show evidence of some coherent Show limited ability to apply knowledge to spresentational skills. Demonstrate little or no evidence of comman outcomes. Lack of analytical and critical abilitik knowledge to solve problems. Organization and seed course	rtical and critical abilities a wide range of complex, falls. If range of knowledge and see of analytical and critical arise attentions. Apply effect and of knowledge and skills loaderately effective organical and logical thinking, but solve problems. Apply limited of knowledge and skills requited and logical thinking, but solve problems. Apply limited of knowledge and skills are logical and coherent to the presentational skills are	vledge and skills required and logical thinking, with miliar and unfamiliar situdes and logical thinking and logical thinking and logical thinking and logical thinking, cational and presentation red for attaining some of a with limited analytical nited or barely effective ls required for attaining hinking. Show very little	d for attaining all the evidence of original justions. Apply highly ming at least most of inking, and ability to esentational skills. most of the course, and ability to apply mal skills. If the course learning and critical abilities, organizational and the course learning or no ability to apply effective. No. of Hours 36	

and Weighting			course grade (%)
	Assignments	Coursework (assignments, tutorials, and a class test)	40
	Examination	One 2-hour written examination	60
Required/recommended reading and online materials	Bovas Ábraham & Johannes Ledo edition) W. W .S. Wei: Time Series Analy edition) W. K. Li: Diagnostic Checks in Tim	ies Analysis with Applications in R (Springer, 2004) Iter: Statistical Methods for Forecasting (John Warsis: Univariate and Multivariate Methods (Addisted Series (Chapman & Hall/CRC, 2004) es: A Dynamical System Approach (Oxford University)	iley & Sons, 2005, 2nd on-Wesley, 2006, 2nd
Course Website	moodle.hku.hk		

STAT4602 Multivariate da	ita analysis	(6 credits)		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota	6	
Course Co-ordinator	Prof T W	K Fung, Statistics & Actuarial Scien	ce (wingfung@hku.hk)			
Teachers Involved	Prof T W	K Fung, Statistics & Actuarial Scien	ce			
Course Objectives	where ea are often course de	In many designed experiments or observational studies, the researchers are dealing with multivariate data where each observation is a set of measurements taken on the same individual. These measurement are often correlated. The correlation prevents the use of univariate statistics to draw inferences. This course develops the statistical methods for analysing multivariate data through examples in various field of application and hands-on experience with the statistical software SAS.				
Course Contents & Topics	sample. regression	Problems with multivariate data. Multivariate normality and transforms. Mean structure for one sample. Tests of covariance matrix. Correlations: Simple, partial, multiple and canonical. Multivariat regression. Principal components analysis. Factor analysis. Problems for means of several samples. Multivariate analysis of variance. Discriminant analysis. Classification. Multivariate linear model.				
Course Learning Outcomes	On succe	ssful completion of the course, stud	ents should be able to:			
	PROC CA 2. Compa multivaria 3. Investi canonical 4. Explore analysis a	1. Analyze multivariate data with main SAS procedures, such as PROC IML, PROC REG, PROC CORI PROC CANCORR, PROC PRINCOMP, PROC FACTOR, PROC DISCRIM, PROC CANDISC and etc. 2. Compare the mean structure of multiple measurements for one or more than one population(s) be multivariate MANOVA and profile analysis. 3. Investigate the linear associations among one/two group(s) of variables by multiple, partial an canonical correlation and multivariate regression. 4. Explore the latent linear structure of a data set with multiple measurements by principal componen analysis and factor analysis. 5. Classify observations of a population with one or more than one measurements by discriminal analysis.				
Pre-requisites and Co-requisites and mpermissible combination)	Pass in S	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting				
Offer in 2014 - 2015	Y 2nd	l sem		Examination	May	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	S	Details		No. of Hours	
& Learning Activities	Lectures	-	_ = = =================================		36	
	Tutorials				12	
		Reading / Self study			100	
	1	•				

	Assignments	tutorials, and a class test)	50
	Examination	One 3-hour written examination	50
Required/recommended reading and online materials	Johnson, R. A. & Wichern, D. W.: Applied Mul Mardia K. V., Kent J. T., and Bibby J. M.: Mult Seber G. A. F.: Multivariate Observations (Joh Morrison D. F.: Multivariate Statistical Method Hair J. F., Anderson R. E., Tatham R. L., & E 6th edition) Srivastava M. S.: Methods of Multivariate Stat SAS Manuals on-line: Use the HELP button.	ivariate Analysis (Academic Press, 1979) In Wiley & Sons, 1984) Is (McGraw-Hill, 1990, 3rd ed.) Black W. C.: Multivariate Data Analysis (Pre	,
Course Website	moodle.hku.hk		

STAT4603 Current topics	in risk man	agement (6 credits)	A	cademic Year	2014	
Offering Department	Statistics 8	& Actuarial Science	Q	uota		
Course Co-ordinator	TBC, Stati	stics & Actuarial Science ()				
Teachers Involved						
Course Objectives	managem	This course is to broaden the students knowledge of risk management by considering current topics in risk management. These topics will build on the theory and methods covered in the core courses. The topics offered each year depend on staff availability.				
Course Contents & Topics		isk; BASEL III and beyond; Operati s in risk management.	onal risk; Model risk; C	Cutting edge ris	k analytics and	
Course Learning Outcomes	On succes	ssful completion of the course, students	s should be able to:			
	2. Underst	 Gain insights into current advances in risk management. Understand current risk management pitfalls and development. Make effective use of models and techniques for managing various kinds of risk. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	Pass in STAT4601 Time-series analysis				
Offer in 2014 - 2015	N		E	xamination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of origina thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details		eighting in fina ourse grade (%	
	Assignme	ents	Coursework (assign tutorials and class test)	nments, (s))	60	
	Examination		One 3-hour written exa	mination	40	
Required/recommended reading and online materials	Dowd, K: Measuring Market Risk. 2nd Edition (Wiley, 2005). (Chapters 14, 16) Fiedler, R:: Liquidity Modelling. (Risk Books, 2011) Franzetti, C:: Operational Risk Modeling and Management. (Chapman & Hall/CRC Finance Series, 2010) Basel Committee on Banking Supervision:Basel III: International Framework for liquidity risk measurements and monitoring (BIS, 2010) Basel Committee on Banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for more resilient banking Supervision:Basel III: A global regulatory framework for					
		ng systems (BIS, 2010)	/ t g.oba. rogulatory			

credits)	eni anu da	sel Accords in banking and financ	ce (6 Academic	Year 2014		
Offering Department	Statistics	& Actuarial Science	Quota			
Course Co-ordinator	Mr P K Y	Pang, Statistics & Actuarial Science (the_	pang @yahoo.com)	<u>'</u>		
Teachers Involved	Mr P K Y	Pang, Statistics & Actuarial Science				
Course Objectives	finance in forming a	To provide comprehensive knowledge and in-depth understanding of risk management in the banking and finance industry to students. The focus is on management with basic measurement fundamentals only forming a part of the course. Accordingly, minimal background in quantitative methods will be required and involved. However, basic financial product (eg: bonds, swaps, options) knowledge will be required.				
Course Contents & Topics	- the impo - risk natu - design a - the impo - the comp - measure - Basel ao - key dev issues, - the impo	The course introduces and explains: - the importance of risk management, - risk nature and types, - design and establishment of a risk management framework, - the importance of people and corporate culture, - the complete risk management cycle, - measurement and management of credit, market and operational risks, - Basel accords and the capital treatments for credit, market and operational risks, - key developments (eg: Know-Your-Customers, Anti-Money laundering, Sarbanes-Oxley) and critical issues, - the importance of business continuity, - design and implementation of a business continuity plan.				
Course Learning Outcomes	industry): 1. Unders principle a 2. Design 3. Demon 4. Explain	On successful completion of the course, students should be able to (in the context of banking and finance				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S Derivative	TAT3910 Financial economics I or STAT s and risk management or (FINA2322 De	3905 Introduction to financial crivatives and any University lev	lerivatives or STAT3618 el 3 course).		
Offer in 2014 - 2015	Y 2nd	l sem	Examination	n May		
Offer in 2015 - 2016	Y					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	s I	Details	No. of Hours		
& Learning Activities	Lectures			36		
	Tutorials			12		
	Reading	/ Self study		100		
Assessment Methods and Weighting	Methods		Details	Weighting in fina course grade (%		
	Assignme	ante	Coursework (assignments, utorials, and a class test)	40		
	Examina	tion	One 2-hour written examination	60		
Required/recommended reading	Jorion, P.:	Examination One 2-hour written examination Crouhy, M., Galai, D. and Mark, R.: The Essentials of Risk Management (McGraw-Hill, 2006) Jorion, P.: Financial Risk Manager Handbook + Test Bank: FRM part I/Part II (Wiley, 2010, 6th edition) Hull, J. C.: Risk Management and Financial Institutions (Pearson Higher Education, 2010, 2nd edition)				
and online materials		Gallati, R.: Risk Management and Capital Adequacy (McGrawHill, 2003)				
and online materials Course Website			y (McGrawHill, 2003)			

Offering Department					_		
U 1		& Actuarial Scie		_	Quota		•
Course Co-ordinator			Actuarial Science (wa	atkp @hku.hk)			
Teachers Involved			Actuarial Science				
Course Objectives	swap, or or resulting find quantitative understand	For a commercial bank, credit risk has always been the most significant. It is the risk of default on debt swap, or other counterparty instruments. Credit risk may also result from a change in the value of an asseresulting from a change in the counterparty's creditworthiness. This course will introduce students to quantitative models for measuring and managing credit risk. It also aims to provide students with arunderstanding of the credit risk methodology used in the financial industry and the regulatory framework is which the credit risk models operate.					
Course Contents & Topics	and intern		ls; Credit portfolio m		efault and credit mig ditMetrics, CreditPo		
Course Learning Outcomes	On succes	sful completion	of the course, stude	ents should be able	to:		
	 Estimate Understathe mortal Understathe Estimate 	Understand the Basel requirements for credit risk. Estimate credit scores using the logit model. Understand and estimate default probabilities using various approaches such as Moody's, the KMV at the mortality method. Understand the concept of credit value-at-risk and the CreditMetrics approach. Estimate default correlations. Assess rating systems.					
Pre-requisites (and Co-requisites and Impermissible combination)	managem		905 Introduction to		s I or STAT3618 [es or (FINA2322 [
Offer in 2014 - 2015	Y 2nd	sem			Examination	М	ay
Offer in 2015 - 2016	Υ				'		
Course Grade	A+ to F						
Grade Descriptors	Α	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.						
	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.						
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.						
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.						
_			olve problems. Organizati		ills are minimally effective	or ineffec	
Course Type	Lecture-ba	sed course	nve problems. Organizati		ills are minimally effective	or ineffec	
Course Teaching	Lecture-ba		ove problems. Organizati		ills are minimally effective		
Course Teaching			луе ришенть. Огданіzaн	on and presentational ski	ills are minimally effective		tive.
Course Teaching	Activities		лие ришенть. Отданіzam	on and presentational ski	ills are minimally effective		No. of Hou
Course Type Course Teaching & Learning Activities	Activities Lectures Tutorials		лие ришенть. Отданіzam	on and presentational ski	ills are minimally effective		No. of Hou
Course Teaching	Activities Lectures Tutorials	i	иче ришенть. Отданіzam	on and presentational ski	ills are minimally effective	Weig	No. of Hou
Course Teaching & Learning Activities	Activities Lectures Tutorials Reading	Self study	иче ришенть. Отданіzam	Details	(assignments,	Weig	No. of Hou
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Tutorials Reading	Self study	иче ришенть. Отданіzam	Details Details Coursework tutorials, and co	(assignments,	Weig	No. of Hou
Course Teaching & Learning Activities Assessment Methods	Activities Lectures Tutorials Reading / Methods Assignme Examinat Resti, A. Measurem Saunders, Approache Loffler, G. Jorion, P. Crouhy, M. Hull, J. C. Hull, J. C. Gujarati, E. Bohn, J. R.	Self study Sents and Sironi, A. Bent Models to 6 A. and Allen, Bes to Value at R and Posch, P. (2011). Financi Candia, D., and (2012). Risk M (2012). Options D. N. and Porter And Potter And Stein, R.	(2007). Risk Mana Capital Allocation Po L. (2010). Credit Fi Risk and Other Parac N. (2010). Credit Ris al Risk Manager Hal d Mark, R. (2001). R anagement and Fina s, Futures, and Othe r, D. C. (2009). Basic	Details Details Coursework tutorials, and of tutorials, and of tutorials, and of tutorials. Wiley. Risk Measurement ligms (3rd Edition). Sk Modeling using Endbook (6th Edition) isk Management. Mancial Institutions (3rd r Derivatives (8th Edit Portfolio Managemetrics (5th Edit Portfolio Managemetrics).	(assignments, class test(s)) ritten examination eholders' Value in In and Out of the F Wiley. xcel and VBA (2nd E), Wiley. cGraw-Hill.	Weig cour Banking Financial Edition).	No. of Hou 1 hting in fir se grade (: From Ri

STAT4608 Market risk analy	TAT4608 Market risk analysis (6 credits)		2014

Offering Department	Statistics 8	& Actuarial Science		Quota			
Course Co-ordinator	Dr Z Zhan	g, Statistics & Actuarial Science (zhang	gz08@hku.hk)		'		
Teachers Involved	Dr Z Zhan	g, Statistics & Actuarial Science					
Course Objectives	new meth managem	Financial risk management has experienced a revolution in the last decade thanks to the introduction of new methods for measuring risk, particularly Value-at-Risk (VaR). This course introduces modern risk management techniques covering the measurement of market risk using VaR models and financial timeseries models, and stress testing.					
Course Contents & Topics	simulation	asures; Value-at-Risk (VaR) models); Risk factor mapping; Advanced VaR xture); Principal Component Analysis a	models (GARCH-typ	e models, extrem	e-value theory and		
Course Learning Outcomes	1. Underst 2. Comput 3. Model v 4. Underst	On successful completion of the course, students should be able to: 1. Understand VaR and expected shortfall as risk measures. 2. Compute VaR and expected shortfall. 3. Model volatility using GARCH-type models. 4. Understand extreme-value theory. 5. Understand backtesting and stress testing.					
Pre-requisites (and Co-requisites and Impermissible combination)	[Pass in S	TAT3907 Linear models and forecastin TAT4601 Time-series analysis and (Fl tics of investment risk)]					
Offer in 2014 - 2015	Y 2nd	Isem		Examination	May		
Offer in 2015 - 2016	Υ						
Course Grade	A+ to F						
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.						
Course Type	Lecture-ba	ased course					
Course Teaching	Activities	S	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading /	/ Self study			100		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)		
	Assignme	ents	Coursework (ast tutorials, and a class	signments, s test)	40		
	Examinat	tion	One 2-hour written	examination	60		
Required/recommended reading and online materials	edition) Alexander Alexander Alexander	Jorion, P.: Value-at-Risk: The New Benchmark for Managing Financial Risk (McGraw-Hill, 2007, 3rd					
Course Website	moodle.hk	•		-			

STAT4710 Capstone experience for statistics/risk management undergraduates (6 credits)		Academic Year	2014		
Offering Department	Statistics & Actuarial Science	Quota			
Course Co-ordinator	Prof W K Li, Statistics & Actuarial Science (saas@hku.hk)				
Teachers Involved	Prof W K Li, Statistics & Actuarial Science				
Course Objectives	This project-based course aims to provide students with capstone experience to formulate and investigat real life problems in the area of statistics, risk management, finance, climate, social science, medicine an scientific research by integrating and applying the statistical theories and quantitative techniques learnt i their junior university years.				
Course Contents & Topics	No formal teaching. Students are expected to devote 120-140 hours working on this project. Students				

	work in groups of four or five under the supervision of a teacher. Students are required to give presentation on their work two to three weeks before the end of the semester, and submit their final repart the end of the semester. It aims to help the students to establish a good and solid foundation of life-long learning skills, and enable students to equip with hands-on experience in solving real life problems starting from identification of the key variable(s) of interest, literature search, model formulation, data analysis or simulation, techn report writing and presentation of the results. Students will need to find an interesting topic of their or conduct literature search regarding the most recent research related to the problem, make suggestions improve the current situations or even solve the problem identified in their project.					
Course Learning Outcomes	1. formulation and deterring predictions 2. integrate 3. work in 4. express 5. develop consultation	On successful completion of the course, students should be able to: 1. formulate a problem using statistical or risk management ideas for a particular issue we are facing with and determine ways in which statistics/risk management can be used to solve the problems or to make predictions. 2. integrate theory and practice, and to understand limitations of their current knowledge. 3. work in a team and to collaborate with people with different background. 4. express ideas effectively in both written and oral forms. 5. develop further logical, critical thinking, creativity, technical report writing, communication and consultation skills. 6. advocate to others the appreciation of statistics/risk management as to its relevance to our daily life.				
Pre-requisites (and Co-requisites and Impermissible combination)	STAT4XXX who are in	Students are expected to have satisfactorily completed at least 24 credits of advanced level (STAT3XXX, STAT4XXX or STAT6XXX) compulsory/core courses in Risk Management, and Statistics Majors. Students who are interested in taking the course should submit their applications to the Department. This capstone course is for Risk Management, and Statistics Majors students only.				
Offer in 2014 - 2015	N		Examination	ı		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
		knowledge to most familiar situations. Apply mod	derately effective organizational and presen			
	D Fail	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command	owledge and skills required for attaining sor and logical thinking, but with limited analy love problems. Apply limited or barely effe d of knowledge and skills required for attai	me of the course learning tical and critical abilities. ective organizational and ining the course learning		
		Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills.	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effe d of knowledge and skills required for attai s, logical and coherent thinking. Show very	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply		
Course Type	Fail	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effe d of knowledge and skills required for attai s, logical and coherent thinking. Show very	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply		
Course Teaching	Fail	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effe d of knowledge and skills required for attai s, logical and coherent thinking. Show very	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply		
	Fail Project-ba Activities	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effe d of knowledge and skills required for attai s, logical and coherent thinking. Show very presentational skills are minimally effective	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply or ineffective.		
Course Teaching	Fail Project-ba Activities	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course Self study	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effect of for knowledge and skills required for attains, logical and coherent thinking. Show very presentational skills are minimally effective Details Tutorials, group work/project,	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply or ineffective.		
Course Teaching & Learning Activities Assessment Methods	Fail Project-ba Activities Reading /	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course Self study	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effect of for knowledge and skills required for attains, logical and coherent thinking. Show very presentational skills are minimally effective presentations.	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply or ineffective. No. of Hours 120 Weighting in final		
Course Teaching & Learning Activities Assessment Methods	Fail Project-ba Activities Reading / Methods Research No specific	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course Self study	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effect of of knowledge and skills required for attains, logical and coherent thinking. Show very presentational skills are minimally effective Details Tutorials, group work/project, reading/self-study Details Continuous assessment Idents are encouraged to obtain information of the property of the	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply or ineffective. No. of Hours 120 Weighting in final course grade (%) 100 formation via various		
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading	Fail Project-ba Activities Reading / Methods Research No specific	Demonstrate partial but limited command of kno outcomes. Show evidence of some coherent a Show limited ability to apply knowledge to so presentational skills. Demonstrate little or no evidence of command outcomes. Lack of analytical and critical abilities knowledge to solve problems. Organization and seed course Self study report c list of textbooks and references. Studmain library, e-journals, internet, and discontinuations.	owledge and skills required for attaining so and logical thinking, but with limited analy live problems. Apply limited or barely effect of of knowledge and skills required for attains, logical and coherent thinking. Show very presentational skills are minimally effective Details Tutorials, group work/project, reading/self-study Details Continuous assessment Idents are encouraged to obtain information of the property of the	me of the course learning tical and critical abilities. ective organizational and ining the course learning little or no ability to apply or ineffective. No. of Hours 120 Weighting in final course grade (%) 100 formation via various		

STAT4711 Capstone experience credits)	perience for actuarial science undergraduates (6	Academic Year	2014		
Offering Department	Statistics & Actuarial Science Quota				
Course Co-ordinator	Prof W K Li, Statistics & Actuarial Science (saas@hku.hk)				
Teachers Involved	Prof W K Li, Statistics & Actuarial Science				
Course Objectives	This project-based course aims to provide students with capstone of practical problems in actuarial science by integrating and applying act their university years. It aims to help the students to establish a go skills, and to enable students to equip with hands-on experience definition of the problem, designing the solution, and presentation of the	tuarial theories and tech od and solid foundation in solving practical prol	nniques learnt in of self-learning		
Course Contents & Topics	No formal teaching will be given for this course. Students are expect this project. Students will work in groups of four or five under the sus supervisor. Students are required to give a presentation on their work semester, and submit their final report at the end of the semester.	pervision of a teacher an	nd/or an industr		
	Topics acceptable for projects in this course can be related to any of 600	the traditional actuarial a	areas of practice		

Course Learning Outcomes	Students suitable Department Students activities On succession 1. define solutions 2. integral 4. deliver 5. development Students skills.	life insurance, pension, finance, investrate are also encouraged to suggest topics teacher and/or industry supervisor. All to ent to ensure relevance to actuarial science will need to decide on the topic for a prelated to the topic, and make suggestion restful completion of the course, students are a practical problem, discuss the issues for the problems. The problems are theoretical results and practical approar a team and to collaborate with members of actuarial results effectively in a written responding to the proposition of the problems.	in non-traditional actuarial areas propics for this course will be subject to ce. ractical project, conduct market resear on a solution of the problem identified should be able to: es faced by different stakeholders, and to specify limitations of curres with different background. eport and in oral presentations. ty, technical report writing, communications.	vided they can find a final approval by the rch regarding industry I in their project. and design workable ent developments.		
Pre-requisites (and Co-requisites and Impermissible	Pass in STAT6X	n to a non-actuarial audience the approac system. at least 24 credits of advanced leve XX) in BSc(Actuarial Science) program in this course; or	el compulsory/core courses (STAT3)	XXX, STAT4XXX or		
combination)	Pass in S	STAT3909 Advanced life contingencies, of stone course is for BSc(Actuarial Science)				
Offer in 2014 - 2015	N	2001.0 000.00 10 101 200(10000.00)	Examination	n		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analytical and critical abilit	and of knowledge and skills required for attaities, logical and coherent thinking. Show very dipresentational skills are minimally effective or i	little or no ability to apply		
Course Type	Project-b	ased course				
Course Teaching & Learning Activities	Activitie	98	Details	No. of Hours		
a Learning Activities	Reading / Self study Tutorials, group work/project, reading/self-study			120		
	Methods					
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
		s ch report	Details Written report and oral presentation			

STAT4766 Statistics intern	ship (6 credits)	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota		
Course Co-ordinator	Dr P L H Yu, Statistics & Actuarial Science (plhyu@hku.hk)			
Teachers Involved	Various teachers as the assessors of oral presentations and written	reports, Statistics &	Actuarial Science	
Course Objectives	This course is offered to students majoring in Statistics or Risk Management who take on a minimum of 160 hours of internship work related to his major disciplines. It provides studer with first-hand experience in the applications of academic knowledge in a real-life work environment.			
Course Contents & Topics	Upon completion of the internship, each student is required to submit a written report and to give presentation on his/her internship experience. The report should emphasize important working/education experiences encountered by the student during his/her internship. In many situations, this would mean report of the project(s) that the student has been involved in during his/her internship.			
Course Learning Outcomes	On successful completion of the course, students should be able to 1. Gain first-hand work experience in an industry related to statistic 2. Apply knowledge in statistics and risk management to solve prac 3. Understand contexts for specific quantitative skills developed i courses. 4. Communicate specialist knowledge in statistics and risk menvironment.	s and risk manageme tical problems in the n basic statistics and	work place. risk managemen	

Pre-requisites (and Co-requisites and Impermissible combination)	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in the Risk Management, and Statistics Majors. Students are expected to have satisfactorily completed their Year 3 study. This capstone course is for Risk Management, and Statistics Majors students only.			
Offer in 2014 - 2015	Y 2nd	sem Summer	Examination	No Exam
Offer in 2015 - 2016	Υ	Υ		
Course Grade	Pass/Fail	Pass/Fail		
Grade Descriptors	Pass	Able to apply knowledge to solve problems in in the job or assigned by supervisor(s). Esta colleagues, and clients in the job. Successful working hours, written and oral report, and performance in the above would be awarded a	blishes effective collaboration and commun ly fulfills the requirements set out in the Col evaluation by supervisor(s), etc. Students	ication with supervisor(s), urse Description regarding
	Fail	Very limited or no ability to solve problems in or assigned by supervisor(s). Fails to establi colleagues, or clients in the job. Fails to satisf hours, written and oral report, or evaluation by	sh effective collaboration or communication y the requirements set out in the Course Des	with supervisor(s), other
Course Type	Internship			
Course Teaching	Activities		Details	No. of Hours
& Learning Activities	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)			160
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)
	Written report		written report, employer's feedback and oral presentation	100
Required/recommended reading and online materials	presentation performance	pletion of the internship, each student on on their internship experience. See during the internship period (in the will assess the student based on the fe	Supervisors will assess the stude e case of internships outside the u	ents based on their niversity, the internal
Course Website	moodle.hku	ı.hk		
Additional Course Information	to those wh Satisfactor internship Distinction" obtain the a Enrolment	of this course is not conducted via the relevant Department/School office	counted towards the Capstone rec script. This course will be assesse o enrol in this course should conta ne online course selection system	quirement. Details of don "Pass, Fail and act the Department to and should be made

STAT4767 Actuarial scien	nce intern	ship (6 credits)	Academic Year	2014	
Offering Department	Statistics	& Actuarial Science	Quota		
Course Co-ordinator	Dr L F K	Ng, Statistics & Actuarial Science (flouisng@hku.hk)			
Teachers Involved	Various to	eachers as the assessors of oral presentations and written re	eports, Statistics & A	ctuarial Science	
Course Objectives		rse is offered to actuarial science students who take os. The objective is for a student to complete this course as			
Course Contents & Topics	encounte	This course will include a written report which should emphasize important working/ educational experience encountered by the student during his/her internship. In many situations, this would mean a report of the project(s) that the student has been involved in during his/her internship.			
Course Learning Outcomes	1. Gain p 2. Describ 3. Explair	essful completion of the course, students should be able to: ractical experiences during internship. soe basic actuarial practices learned during the internship. In how actuarial theories learned in University can be applied	in practice.		
	4. Provide	e context for specific technical skills developed in basic actu-	arial courses.		
(and Co-requisites and	Pass in STAT6XX	e context for specific technical skills developed in basic actu- at least 24 credits of advanced level compulsory/core (X) in BSc(Actuarial Science) programme including STAT39 stone course is for BSc(Actuarial Science) students only.	courses (STAT3XX		
(and Co-requisites and mpermissible combination)	Pass in STAT6XX	at least 24 credits of advanced level compulsory/core (X) in BSc(Actuarial Science) programme including STAT39	courses (STAT3XX		
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015	Pass in STAT6XX This caps	at least 24 credits of advanced level compulsory/core (X) in BSc(Actuarial Science) programme including STAT39 stone course is for BSc(Actuarial Science) students only.	courses (STAT3XX 01 Life contingencies	s; and	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Pass in STAT6XX This caps Y 2nd	at least 24 credits of advanced level compulsory/core (X) in BSc(Actuarial Science) programme including STAT39 stone course is for BSc(Actuarial Science) students only.	courses (STAT3XX 01 Life contingencies	s; and	
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Pass in STAT6X> This caps Y 2nd Y	at least 24 credits of advanced level compulsory/core (X) in BSc(Actuarial Science) programme including STAT39 stone course is for BSc(Actuarial Science) students only.	courses (STAT3XX 01 Life contingencies Examination ully handles and carries of contain and communication and communication as set out in the Course	No Exam No Exam but the work required in on with supervisor(s), Description regarding	

Course Type	Internship		
Course Teaching & Learning Activities	Activities	Details	No. of Hours
a Learning Activities	Internship work	it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time)	
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Written report	written report, employer's feedback and oral presentation	100
Course Website	moodle.hku.hk		
Additional Course Information	those who have completed Year 2. Satisfactory completion of this cour internship will be recorded on the st Distinction" basis. Students who are obtain the approval. Enrolment of this course is not conductive the statement of the course is not conductive the statement of the s	actorily completed their Year 3 study. Special consecutive can be counted towards the Capstone retudent's transcript. This course will be assess interested to enrol in this course should control ducted via the online course selection systems chool office after approval has been obtain	equirement. Details of ed on "Pass, Fail and act the Department to and should be made

	ctuarial s	cience project (6 credits)		Academic Year	2014	
Offering Department	Statistics 8	Actuarial Science		Quota		
Course Co-ordinator	Prof S M S	Lee, Statistics & Actuarial Science (sms.	lee @hku.hk)			
Teachers Involved	Various tea	achers as the assessors of oral presentat	ions and written repor	ts, Statistics & Act	uarial Science	
Course Objectives		Each year a few projects suitable for Actuarial Science students will be offered to provide students with practical experience in approaching a real problem, in report writing and in oral presentation.				
Course Contents & Topics		These projects, under the supervision of individual staff members, involve the applications of statisti and/or probability in a wide range of problems of practical and/or academic interests.			ons of statistics	
Course Learning Outcomes	1. Formula 2. Learn ar	On successful completion of the course, students should be able to: 1. Formulate meaningful research problems. 2. Learn and apply advanced techniques in probability and/or statistics to solve real life problems. 3. Summarize and present research findings in a professional manner.			lems.	
Pre-requisites (and Co-requisites and Impermissible combination)	STAT6XXX Linear mod Pass or all STAT3911 and	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXXX STAT6XXX) in BSc(Actuarial Science) programme including STAT3902 Statistical models and STAT390 Linear models and forecasting; and Pass or already enrolled in at least one of the following courses: STAT3616 Advanced SAS programmin STAT3911 Financial economics II, STAT4601 Time-series analysis, STAT4602 Multivariate data analysis				
Offer in 2014 - 2015	N			Examination		
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.]					
	B Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.					
	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no cr comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization presentational skills are minimally effective or ineffective.				ces and no critical	
	Project-based course					
Course Type	Project-bas	sed course				
Course Type Course Teaching	Project-bas		Details		No. of Hours	
	Activities		Details		No. of Hours	

	Oral presentation	discussion	50
	Research report	written report	50
Course Website	moodle.hku.hk		
Additional Course Information	Approval is subject to past academic performance	ce.	

STAT4799 Statistics proje	ect (12 cre	dits)	Academic Ye	ear 2014		
Offering Department	Statistics 8	& Actuarial Science	Quota	15		
Course Co-ordinator	Prof S M S	S Lee, Statistics & Actuarial Science (sm	slee@hku.hk)			
Teachers Involved	Various te	achers as the assessors of oral presenta	ations and written reports, Statistics &	Actuarial Science		
Course Objectives		ch year a few projects suitable for Statistics or Risk Management major students will be offered to provide idents with practical experience in approaching a real problem, in report writing and in oral presentation.				
Course Contents & Topics		jects, under the supervision of individ bability in a wide range of problems of p		ications of statistics		
Course Learning Outcomes	Gain first Develop statistical in the state of t	On successful completion of the course, students should be able to: . Gain first-hand experience in solving a research or applied problem in statistics or related areas. 2. Develop skills in important technical tools, including the use of computer software or programs, for typical statistical research and data analyses. 3. Write succinct reports on the findings of a research study. 4. Make concise oral presentation of the findings of a research study.				
Pre-requisites (and Co-requisites and Impermissible combination)	STAT6XX Pass or al STAT3911 and Not for stu	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX o STAT6XXX) in the Major in Risk Management / Statistics including STAT3600 Linear statistical analysis; an Pass or already enrolled in at least one of the following courses: STAT3616 Advanced SAS programming STAT3911 Financial economics II, STAT4601 Time-series analysis, STAT4602 Multivariate data analysis				
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	Υ	Υ				
Course Grade	A+ to F					
Grade Descriptors	Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.] Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical					
	use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills. C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw					
	appropriate conclusions. Apply moderately effective organizational and presentational skills. D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate evidence of little or no grasp of th of analytical and critical abilities, logical and comparison of them. Misuse of data and rest presentational skills are minimally effective or in	coherent thinking. Limited use of secondary ults and/or unable to draw appropriate conclu	sources and no critical		
Course Type	Project-ba	sed course				
Course Teaching	Activities		Details	No. of Hours		
& Learning Activities	Reading /	Self study	the student is expected to meet & discuss with a supervisor regularly in the course of the project	240		
Assessment Methods and Weighting	Methods		Details	Weighting in fina course grade (%)		
	Dissertati	on	written report	50		
	Oral pres	entation	oral presentation & in-class discussion	50		
Course Website	moodle.hk	u.hk				
		s subject to past academic performance.				

STAT4901 Risk theory II (6 c	redits)	Academic Year	2014

Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Dr J K Wo	oo, Statistics & Actuarial Science (jkwo	o @hku.hk)			
Teachers Involved	Dr J K Wo	oo, Statistics & Actuarial Science				
Course Objectives		se is an advanced course in risk theor utility theory, ruin theory, aggregate cl			ed in STAT3906. It	
Course Contents & Topics	coefficien	Utility theory; discrete ruin model; compound Poisson risk model; ruin probability; reinsurance; adjustment coefficient; Lundbergs inequality; Tijms approximation; non-homogeneous birth process; contagion model; mixed Poisson process; inflation model; IBNR (Incurred But Not Reported) claims; mixed Erlang distributions; stop-loss moments; equilibrium distributions.				
Course Learning Outcomes	On succe	ssful completion of the course, student	s should be able to:			
	aversion a 2. Define 3. Calcula 4. Unders 5. Unders frequencie 6. Unders model.	 Understand utility theory including some commonly used utility functions, Jensens inequality, aversion and utility maximization. Define discrete and continuous ruin models. Calculate the adjustment coefficient, Lundbergs inequality and Tijms approximation in ruin theory. Understand the effect of reinsurance and change of parameters on ruin probability. Understand non-homogeneous birth process and its applications as contagion models for cl frequencies. Understand mixed Poisson process and its applications including the inflation model and the IE model. Derive the relationship between stop-loss moments and equilibrium distributions. 				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	TAT3906 Risk theory I				
Offer in 2014 - 2015	Y 2nd	Y 2nd sem Examination May				
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors		Demonstrate thereugh meeten, et an edven	and lovel of automobics know	uladga and akilla raqui	ired for attaining all the	
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	·	Details		Weighting in final course grade (%)	
	Assignm	ents	Coursework (as tutorials, and a class	ssignments, ss test)	25	
	Examina	tion	One 3-hour written	examination	75	
Required/recommended reading and online materials	2007, 3rd Kaas R., edition). Bowers N 2nd editio Willmot G	Goovaerts M., Dhaene J., & Denuit L., Gerber H.U., Hickman J.C. & Jone	M.: Modern Actuaria	al Risk Theory (S	of Actuaries, 1997	
	, , ,	ku.hk				

STAT4902 Selected topics in actuarial science (6 credits)		Academic Year	2014	
Offering Department	ng Department Statistics & Actuarial Science Quota			
Course Co-ordinator	TBC, Statistics & Actuarial Science ()	TBC, Statistics & Actuarial Science ()		
Teachers Involved	TBC, Statistics & Actuarial Science	TBC, Statistics & Actuarial Science		
Course Objectives	This course is an advanced course in actuarial science which d	iscusses selected topics	which potential	

		students will find useful. It focuses o on applications.	n tools that are in the frontie	er of actuari	al science with	
Course Contents & Topics	The contents will be chosen from the following topics: Coherent risk measures; Premium calculation principles; Copulas; Extreme value theory; Stochastic dominance; Ordering of risks; Renewal equations with insurance applications; Reliability properties; Generalized linear models; Comonotonicity; Measures of dependency; Phase-type distributions; Applications to enterprise risk analysis; Other topics as determined by the instructor.					
Course Learning Outcomes	On succe	ssful completion of the course, students	s should be able to:			
		Understand the mathematical tools useful for further research and applications. Apply the tools to solve potentially unseen problems.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	TAT3906 Risk theory I				
Offer in 2014 - 2015	N		Exami	nation		
Offer in 2015 - 2016	N					
Course Grade	A+ to F					
Grade Descriptors	A	Demonstrate thorough mastery at an advanc course learning outcomes. Show strong ana thought, and ability to apply knowledge to a effective organizational and presentational sk	lytical and critical abilities and logical wide range of complex, familiar and	thinking, with e	vidence of original	
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
	Fail	Demonstrate little or no evidence of commo outcomes. Lack of analytical and critical abilia knowledge to solve problems. Organization a	ities, logical and coherent thinking. Sh	now very little of	no ability to apply	
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	s	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	/ Self study			100	
Assessment Methods and Weighting	Methods	· · · · · · · · · · · · · · · · · · ·	Details		ighting in final urse grade (%)	
	Assignm	ents	Coursework (assignment tutorials and class test(s))	ts,	40	
	Examina	tion			60	
Required/recommended reading and online materials	edition) Denuit N edition) Willmot Applicatio	 Denuit M., Dhaene J., Goovaerts M., & Kaas R.: Actuarial Theory for Dependent Risks (Wiley, 2005, 1st edition). Willmot G.E. & Lin X.S.: Lundberg Approximations for Compound Distributions with Insurance Applications (Springer, 2000, 1st edition). McNeil A.J., Frey R. & Embrechts, P.: Quantitative Risk Management: Concepts, Techniques, and Tools 				
Course Website	moodle.hl	ku.hk				

STAT4903 Actuarial techn	TAT4903 Actuarial techniques for general insurance (6 credits)					
Offering Department	Statistics & Actuarial Science Quota					
Course Co-ordinator	Dr L F K Ng, Statistics & Actuarial Science (flouisng@hku.hk)					
Teachers Involved	Dr L F K Ng, Statistics and Actuarial Science					
Course Objectives	claim liabilities for general insurance. Application of the actuarial te problems will be emphasized. The course also provides general	The purpose of this course is to develop knowledge of the basic techniques for ratemaking and estimating claim liabilities for general insurance. Application of the actuarial techniques to resolve general insurance problems will be emphasized. The course also provides general knowledge on the general insurance markets in Hong Kong and China. Students will acquire the fundamental concept on general insurance actuarial science together with the supporting calculations.				
Course Contents & Topics	General Insurance Markets in Hong Kong, Taiwan and PRC Introduction of general insurance markets Regulations on general insurance Basic techniques for ratemaking How to read and use manual rate pages Ratemaking related to exposures					

	- Ratemak - Calculate - Pure pre - Loss Rat - Rating di - Consider 3. Estimat - Data req - Build and - Reservin - Consider - Estimate - Appraise	d analyze claim development triangles g techniques rations when estimating the claim liabili recoveries and unpaid claim adjustme and validation of the estimated results rent topics Applications using predictive	ties nt expenses is e modeling in General	Insurance	
Course Learning Outcomes	On succes 1. understa 2. calculate	 e.g. predictive modeling, Enterprise Risk Management, etc On successful completion of the course, students should be able to: 1. understand the feature and underlying risk of general insurance products 2. calculate the premium rate for basic general insurance products 			
Pre-requisites (and Co-requisites and Impermissible combination)		the claims liabilities for general insural AT3906 Risk theory I	nice products		
Offer in 2014 - 2015	N			Examination	
Offer in 2015 - 2016	Υ			1	
Course Grade	A+ to F				
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of commar outcomes. Lack of analytical and critical abiliti knowledge to solve problems. Organization an	es, logical and coherent th	inking. Show very little	or no ability to apply
Course Type	Lecture-ba	sed course			
Course Teaching	Activities		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials				12
	Reading /	Self study			100
Assessment Methods and Weighting	Methods		Details		Veighting in final course grade (%)
	Assignme	nts	Coursework (ass tutorials, and a class	ignments, s test)	25
	Examinati	on	One 3-hour written e	examination	75
Required/recommended reading and online materials	Version, Ju	J.F., Estimating Unpaid Claims Usin ıly 2010 and Modlin, C., Basic Ratemaking, Ca		·	•
Course Website	moodle.hk	u.hk			
Additional Course Information	Trending P American Principles, Casualty A Property at Feldblum, Insurance,	s: standard Board of the American Acade rocedures in Property/Casualty Insurar Academy of Actuaries Committee or June 1980 Actuarial Society Committee on Rate ad Casualty Insurance Ratemaking, Ca S., Personal Automobile Premiums: A PCAS LXXXIII, 1996, pp. 190-256 (exc Services Office, Inc., Personal Automobile	nce Ratemaking n Risk Classification, making Principles, S asualty Actuarial Socie An Asset Share Pricit cluding Secions 7-9)	Risk Classificati Statement of Prin ety, May 1988 ng Approach for I	ion Statement of ciples Regarding Property-Casualty

STAT6110 Advanced proba	Academic Year	2014	
Offering Department	Statistics & Actuarial Science	Quota	

Course Co-ordinator	Prof Y Lar	Prof Y Lam, Statistics & Actuarial Science (lamy@hku.hk)				
Teachers Involved	Prof Y Lar	Prof Y Lam, Statistics & Actuarial Science				
Course Objectives	basic con	This course provides an introduction to measure theory and probability. The course will focus on some basic concepts in theoretical probability which are important for students to do research in actuarial science, probability and statistics.				
Course Contents & Topics	measurab	sigma-algebra, measurable space, measure and probability, measure space and probability space, measurable functions, random variables, integration theory, characteristic functions, convergence of random variables, Hilbert spaces, conditional expectation, martingales.				
Course Learning Outcomes	1. Undersi 2. Learn lemma and 3. Undersi	On successful completion of this course, students should be able to: 1. Understand the fundamental measure theory and probability theory. 2. Learn the general concept of integration, understand the monotone convergence theorem, Fatou's lemma and dominated convergence theorem. 3. Understand the concept of conditional expectation. 4. Have some elementary knowledge of martingale.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	TAT3603 Probability modelling or STAT	Г3903 Stochastic mo	dels		
Offer in 2014 - 2015	Y 1st	sem		Examination	Dec	
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.				
Course Type	Lecture-ba	ased course				
Course Teaching	Activities	S	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
	Reading	Reading / Self study			100	
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	
	Assignme	ents	Coursework (as tutorials, and a class	ssignments, ss test)	50	
	Examinat	tion	One 2-hour written	examination	50	
Required/recommended reading and online materials	New York	nd and Philip Protter: Probability Essent , 2004, 2nd edition) L.: A Course in Probability Theory (Aca		0		
Course Website	moodle.hk	ku.hk				

STAT6111 Computational	Academic Year	2014			
Offering Department	Statistics & Actuarial Science Quota				
Course Co-ordinator	Dr G Tian, Statistics & Actuarial Science (gltian@hku.hk)				
Teachers Involved	Dr G Tian, Statistics & Actuarial Science				
Course Objectives	This course aims to give undergraduate and postgraduate students in statistics a background in modern computationally-intensive methods in statistics. It emphasizes the role of computation as a fundamental tool of discovery in data analysis, of statistical inference, and for development of statistical theory and methods.				
Course Contents & Topics	Contents include: Numerical optimization and integration, EM algorithm and its variants, Simulation and Monte Carlo integration, Importance sampling and variance reduction techniques, Markov chain Monte Carlo methods, and Bootstrap methods.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the importance of the technique for generating random variables in Bayesian statistics, Monte Carlo integration and bootstrapping methods.				
	600				

	algorithm 3. Unders their rang 4. Apply generate 5. Apply I	and apply them to fit g stand the essence and le of application, and ap EM-type algorithms to posterior samples. Bootstrap methods to o	eneralized linear basic principle o oply them to solve find the posterion btain estimated s	f the EM-type algorithms and N	MM-type n Monte	algorithms, realize
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	TAT3600 Linear statist	ical analysis or S	TAT3907 Linear models and fo	recastin	g
Offer in 2014 - 2015	Y 1st	Y 1st sem			tion	Dec
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	course learning outcome	es. Show strong analypply knowledge to a	ed level of extensive knowledge and s ytical and critical abilities and logical the wide range of complex, familiar and u ills.	ninking, wit	h evidence of original
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
	С	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
	D	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	outcomes. Lack of analy	tical and critical abilit	nd of knowledge and skills required fies, logical and coherent thinking. Shond presentational skills are minimally elements	w very little	e or no ability to apply
Course Type	Lecture-b	ased course				
Course Teaching	Activitie	es		Details		No. of Hours
& Learning Activities	Lectures	.				36
	Tutorials	.				12
	Reading	Reading / Self study				100
Assessment Methods and Weighting	Methods	s		Details		Weighting in final course grade (%)
	Assignm	ents		Coursework (assignments practical work, and a term tes		50
	Examina	ation		One 2-hour written examinati	on	50
Required/recommended reading and online materials	iterative C Givens, C	Computation (Chapman G.H. and Hoeting, J.A.:	ı & Halİ/CRC, Bo Computational S		J	
Course Website	moodle.h	ku.hk				

STAT6114 Advanced statist	ical modelling (6 credits)	Academic Year	2014		
Offering Department	Statistics & Actuarial Science	Quota			
Course Co-ordinator	Dr J F Yao, Statistics & Actuarial Science (jeffyao@hku.hk)				
Teachers Involved	Dr J F Yao, Statistics & Actuarial Science				
Course Objectives	This course introduces modern methods for constructing and evalumplementation using popular computing software, such as SAS or R.		nodels and their		
Course Contents & Topics	It will cover both the underlying principles of each modelling approach and the statistical properties of the model estimation procedures. Topics from: (i) Generalized linear models; (ii) Random effects and mixed models; (iii) Nonparametric and semi-parametric methods: kernel and local polynomial regression; selection of smoothing parameters; (iv) Additive models; semi-parametric mixed models; generalized additive models; and (v) General issues of model selection: AIC. BIC and cross-validation.				
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Undersatnd the definition and basic characteristics of each statistical model. 2. Identify for a given set of data the most suitable statistical model and tools to use. 3. Develop skills of building a scoring model for various management and prediction, problems involving a binary response; employing the powerful tool of kernel density estimation using SAS or R for real data mining problems; and analysing data with SAS procedures PROC LOGISTIC, PROC GENMOD, PROC GLM, PROC UNIVARIATE (option KERNEL) or equivalent R Packages.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3600 Linear statistical analysis				
Offer in 2014 - 2015	Y 2nd sem	Examination	May		

Υ	Υ				
A+ to F	A+ to F				
A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.				
С	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.				
D	outcomes. Show evidence of some coher	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and			
Fail	outcomes. Lack of analytical and critical ab	ilities, logical and coherent thinking. Show very	little or no ability to apply		
Lecture-l	ased course				
Activities		Details	No. of Hours		
Lectures			36		
Tutorials			12		
Reading	/ Self study		100		
Method	5	Details	Weighting in final course grade (%)		
Assignn	ents	Coursework (assignments and class test(s))	50		
Examination		One 2-hour written examination	50		
2. Textbo	1. Textbook : R.H. Myers et al.: Genelized Linear Models (2nd ed.), Wiley 2. Textbook : W. Hardle et al., 2004: Nonparametric and Semi-parametric Models. Springer 3. Suggested Reading : M. Panik, 2009: Regression Modeling, CRC Press				
moodle h	ku hk				
	A+ to F A B C D Fail Lecture-b Activitie Lectures Tutorials Reading Methods Assignm Examina 1. Textbo 2. Textbo 3. Sugges	A+ to F A Demonstrate thorough mastery at an advar course learning outcomes. Show strong an thought, and ability to apply knowledge to effective organizational and presentational set the course learning outcomes. Show evide apply knowledge to familiar and some unfarmed the course learning outcomes. Show evidence of some knowledge to familiar and some unfarming outcomes. Show evidence of some knowledge to most familiar situations. Apply Demonstrate partial but limited command of outcomes. Show evidence of some show limited ability to apply knowledge the presentational skills. Fail Demonstrate little or no evidence of commoutcomes. Lack of analytical and critical abknowledge to solve problems. Organization continuous learning outcomes. Lack of analytical and critical abknowledge to solve problems. Organization continuous. Lectures Tutorials Reading / Self study Methods Assignments Examination 1. Textbook: R.H. Myers et al.: Genelized Linea. Textbook: W. Hardle et al., 2004: Nonparam	A+ to F A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills re course learning outcomes. Show strong analytical and critical abilities and logical thinking thought, and ability to apply knowledge to a wide range of complex, familiar and unfamilie effective organizational and presentational skills. B Demonstrate substantial command of a broad range of knowledge and skills required for the course learning outcomes. Show evidence of analytical and critical abilities and logic apply knowledge to familiar and some unfamiliar situations. Apply effective organizational at learning outcomes. Show evidence of some analytical and critical abilities and logical think knowledge to most familiar situations. Apply moderately effective organizational and present court of the course partial but limited command of knowledge and skills required for attaining so outcomes. Show evidence of some coherent and logical thinking, but with limited analy Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational skills. Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining so outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very knowledge to solve problems. Organization and presentational skills are minimally effective. Lecture-based course Activities Details Lectures Tutorials Reading / Self study Methods Details Coursework (assignments and class test(s)) Examination One 2-hour written examination 1. Textbook : R.H. Myers et al.: Genelized Linear Models (2nd ed.), Wiley 2. Textbook : W. Hardle et al., 2004: Nonparametric and Semi-parametric Models. Sp 3. Suggested Reading : M. Panik, 2009: Regression Modeling, CRC Press		

STAT6115 Advanced quai	ntitative ri	sk management and finance (6 credits)	Academic Year	2014		
Offering Department	Statistics	s & Actuarial Science	Quota			
Course Co-ordinator	Prof W k	Li, Statistics & Actuarial Science (hrntlwk@hku.hk)				
Teachers Involved	Prof W k	Prof W K Li, Statistics & Actuarial Science				
Course Objectives	links fina	This course covers statistical methods and models of importance to risk management and finance and links finance theory to market practice via statistical modeling and decision making. Emphases will be pure on empirical analyses to address the discrepancy between finance theory and market data.				
Course Contents & Topics	of option	onte Carlo and Quasi-Monte Carlo Methods; Variance as and the value-at-risk for risk management; Review models; Stochastic interest rate models; Extreme valu	v of univariate volatility mo	odels; multivaria		
Course Learning Outcomes	1. Apply 2. Predic	On successful completion of this course, students should be able to: 1. Apply Monte Carlo methods to determine the value of options and other derivative securities. 2. Predict volatility of a set of securities using appropriate models. 3. Estimate the value-at-risk under extreme value theory.				
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in S	STAT4608 Market risk analysis				
Offer in 2014 - 2015	N		Examination			
Offer in 2015 - 2016	Υ					
Course Grade	A+ to F					
Grade Descriptors	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.				
	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.					
	C Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.					
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.					
		procentational attilia.				

	Fail		al and critical abilities, logical and coherent thinking. Showns. Organization and presentational skills are minimally effor			
Course Type	Lecture-b	Lecture-based course				
Course Teaching & Learning Activities	Activitie	es	Details	No. of Hours		
	Lectures	3		36		
	Tutorials	S		12		
	Reading	g / Self study		100		
Assessment Methods and Weighting	Method	s	Details	Weighting in final course grade (%)		
	Assignm	nents	Coursework (assignments, tutorials, and a class test)	25		
	Examina	ation		75		
Required/recommended reading and online materials	McLeish, Don L.: Monte Carlo Simulation & Finance. (Wiley, 2005). Glasserman, Paul: Monte Carlo Methods in Financial Engineering. (Springer, 2003). Danielsson Jon: Financial Risk Forecasting (Willy 2011) McNeil, A. J., Frey, R. & Embrechts, P.: Quantitative Risk Management (Princeton, 2005) Tsay, R.S.: Analysis of Financial Time Series (Wiley, 2010, 3rd edition)					
Course Website	moodle.h	nku.hk				

	nous in sta	tistics (6 credits)		Academic Year	2014	
Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Dr J F Ya	ao, Statistics & Actuarial Scier	nce (jeffyao@hku.hk)			
Teachers Involved	Dr J F Ya	ao, Statistics & Actuarial Scier	nce			
Course Objectives	useful in	This course introduces some statistical concepts and methods which potential graduate students will find useful in preparing for work on a research degree in statistics. Focus is on applications of state-of-the-art statistical techniques and their underlying theory.				
Course Contents & Topics	1. Basic limit theo 2. Param variants; 3. Nonpa regressio 4. Compu 5. Robus 6. Seque 7. Model	Contents may be selected from: 1. Basic asymptotic methods: modes of convergence; stochastic orders; laws of large numbers; central limit theorems; delta method; Edgeworth expansions; saddlepoint approximations. 2. Parametric and nonparametric likelihood methods: high-order approximations; profile likelihood and its variants; signed likelihood ratio statistics; empirical likelihood. 3. Nonparametric statistical inference: sign and rank tests; Kolmogorov-Smirnov test; nonparametric regression; density estimation; kernel methods. 4. Computationally-intensive methods: cross-validation; bootstrap; permutation methods. 5. Robust methods: measures of robustness; M-estimator; L-estimator; R-estimator; estimating functions. 6. Sequential analysis: sequential probability ratio test; sequential estimation. 7. Model selection using information criteria. 8. Other topics as determined by the instructor.				
Course Learning Outcomes	1. Compr 2. Unders	On successful completion of the course, students should be able to: 1. Comprehend the language and technicalities found in statistical research literature. 2. Understand the use of standard mathematical tools for conducting statistical research. 3. Apply a variety of research tools to solve standard statistical problems. 4. Acquire exposure to some developments in contemporary statistical research.				
	4. Acquire					
(and Co-requisites and			ments in contemporary st	tatistical research.	g	
and Co-requisites and mpermissible combination)	Pass in S	e exposure to some developn	ments in contemporary st	tatistical research.	g Dec	
and Co-requisites and mpermissible combination) Offer in 2014 - 2015	Pass in S	e exposure to some developr STAT3600 Linear statistical ar	ments in contemporary st	atistical research. ear models and forecastin		
(and Co-requisites and impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016	Pass in S	e exposure to some developr STAT3600 Linear statistical ar	ments in contemporary st	atistical research. ear models and forecastin		
Pre-requisites (and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade Grade Descriptors	Pass in S Y 1si	e exposure to some developr STAT3600 Linear statistical ar	ments in contemporary signalysis or STAT3907 Line at an advanced level of exten w strong analytical and critical bowledge to a wide range of co	atistical research. ear models and forecastin Examination sive knowledge and skills requir abilities and logical thinking, with	Dec ed for attaining all the	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in S Y 1si Y A+ to F	e exposure to some developm ETAT3600 Linear statistical ar t sem Demonstrate thorough mastery course learning outcomes. Show thought, and ability to apply known.	ments in contemporary signalysis or STAT3907 Linualysis or STAT3907	Examination Examination Examination Sive knowledge and skills require abilities and logical thinking, wimplex, familiar and unfamiliar seledge and skills required for attaind critical abilities and logical thinking and critical abilities and logical thinking and critical abilities and logical thinking are seledge and skills required for attained critical abilities and logical thinking are seledge.	Dec ed for attaining all the the evidence of original truations. Apply highly aining at least most of hinking, and ability to	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in S Y 1si Y A+ to F	e exposure to some development of the sem Demonstrate thorough mastery course learning outcomes. Show thought, and ability to apply known or apply known or apply the effective organizational and presumant of the course learning outcomes.	at an advanced level of exten w strong analytical and critical oveledge to a wide range of contact and of a broad range of know Show evidence of analytical a some unfamiliar situations. An analytical a some unfamiliar situations when the command of knowledge once of some analytical and critical or some unfamiliar situations.	Examination Examination Examination Examination Examination Sive knowledge and skills require abilities and logical thinking, wimplex, familiar and unfamiliar seledge and skills required for attained critical abilities and logical thinking and skills required for attaining and skills required for attaining and skills required for attaining titical abilities and logical thinking the sand logical think	Dec ed for attaining all the the evidence of original ituations. Apply highly aining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in S Y 1st Y A+ to F A B	e exposure to some development of the sem Demonstrate thorough mastery course learning outcomes. Show thought, and ability to apply knowledge to repair the course learning outcomes. apply knowledge to familiar and Demonstrate general but income learning outcomes. Show evide	at an advanced level of exten w strong analytical and critical owledge to a wide range of cosentational skills. Show evidence of analytical and critical some unfamiliar situations. Applete command of knowledge ince of some analytical and critical command of knowledge ince of some analytical and critical command of knowledge ince of some analytical and critical score command of knowledge and scommand of k	Examination Examination Examination Examination Examination Sive knowledge and skills require abilities and logical thinking, with mplex, familiar and unfamiliar seledge and skills required for attained critical abilities and logical thinking the and skills required for attaining titical abilities and logical thinking ve organizational and presentation kills required for attaining some skills required for attaining skills required for attaining skills required for attaining skills required for at	ed for attaining all the the evidence of original truations. Apply highly aining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply onal skills. of the course learning I and critical abilities.	
(and Co-requisites and Impermissible combination) Offer in 2014 - 2015 Offer in 2015 - 2016 Course Grade	Pass in S Y 1si Y A+ to F A B	e exposure to some development of the sem Demonstrate thorough mastery course learning outcomes. Show thought, and ability to apply known of the course learning outcomes. Show the course learning outcomes apply knowledge to familiar and Demonstrate general but incoment of the course per learning outcomes. Show evide knowledge to most familiar situation outcomes. Show evidence of so Show limited ability to apply knowledge to show evidence of so Show limited ability to apply knowledge to most familiar situations.	at an advanced level of exten w strong analytical and critical wilder ange of knowledge to a wide range of cosentational skills. and of a broad range of knowledge and some unfamiliar situations. Apply moderately effecti	Examination Examination Examination Examination Examination Examination Examination Examination Examination Sive knowledge and skills require abilities and logical thinking, wimplex, familiar and unfamiliar soledge and skills required for attained critical abilities and logical thinking and skills required for attaining titical abilities and logical thinking or organizational and presentations, but with limited analytical Apply limited or barely effective and skills required for attaining some ching, but with limited analytical Apply limited or barely effective and skills required for attaining soherent thinking. Show very littless and skills required for attaining soherent thinking. Show very littless are shown as a s	ed for attaining all the the evidence of original functions. Apply highly aining at least most of hinking, and ability to presentational skills. g most of the course g, and ability to apply onal skills. of the course learning I and critical abilities. we organizational and g the course learning e or no ability to apply	
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Department of Statistics & Actuarial Science

& Learning Activities	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)
	Assignments	Coursework (assignments, tutorials, and a class test)	25
	Examination	One 2-hour written examination	75
Required/recommended reading and online materials		ics. Springer: New York.	lall: New York.
Course Website	moodle.hku.hk		

Degree Regulations

SCIENCE

SECTION X Degree Regulations

REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE (BSc)

These regulations apply to students admitted under the 4-year '2012 curriculum' to the BSc degree curriculum in the academic year 2012-2013 and thereafter. (See also General Regulations and Regulations for First Degree Curricula)

Definitions

Sc1¹ For the purpose of these regulations and the syllabuses for the BSc degree, unless the context otherwise requires:

"Science course" means any course offered by the Faculty of Science, and the Department of Biochemistry.

"Advanced Science course" means any level 3, 4 or above course offered by the Faculty of Science and the Department of Biochemistry.

"Course" means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

"Syllabus" means courses taught by departments, centres, and schools, offered under a degree curriculum.

"Credits" or "credit-units" means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

Admission to the BSc degree

Sc2 To be eligible for admission to the BSc degree, candidates shall:

- (a) comply with the General Regulations;
- (b) comply with the Regulations for First Degree Curricula; and
- (c) satisfy all the requirements of the curriculum in accordance with these regulations and the syllabuses.

Period of study

Sc3 The curriculum for the BSc degree shall normally require eight semesters of full-time study, extending over not fewer than four academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their studies beyond the maximum period of registration of six academic years.

¹ This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.

Selection of courses

Sc4 Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each semester. Any change to the selection of courses shall be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate. Requests for changes after the designated add/drop period of the semester shall not be considered.

Curriculum requirements and progression in curriculum

Sc5

- (a) Candidates shall satisfy the requirements prescribed in UG5 of the Regulations of First Degree Curricula.
- (b) Candidates shall take not fewer than 240 credits, in the manner specified in these regulations and the syllabuses.
- (c) Candidates shall take at least 96 credits of Science courses including all required courses of the major programme of the BSc degree curriculum.
- (d) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements may be fewer than 24 credits.
- (e) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load of 288 credits for the normative period of study specified in the curriculum regulations, save as provided for under Sc5(f).
- (f) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load of 432 credits for the maximum period of registration specified in the curriculum regulations.
- (g) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits will be recorded on the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.
- (h) Candidates shall be recommended for discontinuation of their studies if they have:
 - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
 - (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
 - (iii) exceeded the maximum period of registration specified in Sc3,

unless otherwise permitted by the Board of the Faculty.

Advanced standing

Sc6 Advanced standing may be granted to candidates in recognition of studies completed successfully in an approved institution of higher education elsewhere in accordance with UG2 of the Regulations for First Degree Curricula. Credits granted for advanced standing will be recorded on the transcript of the candidate but shall not be included in the calculation of the GPA.

Assessment

Sc7

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only passed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (d) Candidates are required to make up for failed courses in the following manner: repeating the failed course by undergoing instruction and satisfying the assessment, or for elective courses, taking another course in lieu and satisfying the assessment requirements.
- (e) There shall be no appeal against the results of examinations and all other forms of assessment.

Award of BSc Degree

Sc8 To be eligible for the award of the BSc degree, candidates shall have:

- (a) satisfied the requirements in UG5 of the Regulations for First Degree Curricula;
- (b) passed not fewer than 240 credits, comprising 96 credits of the required courses as prescribed in the major programme of the BSc degree curriculum.

Honours classification

Sc9

(a) Honours classifications shall be awarded in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the Degree of BSc in accordance with the following Cumulative GPA scores, with all courses taken (including failed courses, but not including courses approved by the Senate graded as 'Pass', 'Fail' or 'Distinction') carrying equal weighting:

Class of honours	CGPA range
First Class Honours	3.60 - 4.30
Second Class Honours	(2.40 - 3.59)
Division One	3.00 - 3.59
Division Two	2.40 - 2.99
Third Class Honours	1.70 - 2.39
Pass	1.00 - 1.69

- (b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the Degree of BSc may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.05 Grade Point.
- (c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.

REGULATIONS FOR FIRST DEGREE CURRICULA 1

Regulations for First Degree Curricula (for students admitted under the 4-year '2012 curriculum' to the first year of first degree curricula in 2014-15 and thereafter)

(See also General Regulations)

UG 1 Definitions:

For the purpose of regulations and syllabuses for all first degree curricula unless otherwise defined —

An 'academic year' comprises two semesters, the first semester to commence in September and end in December, and the second semester to commence in January and end in May/June, on dates as prescribed by the Senate. It includes, normally at the end of each semester, a period during which candidates are assessed. For some curricula, a 'summer semester' may be organized in addition to the normal two semesters. Clinical curricula have extended semesters.

A 'summer semester' normally comprises seven to eight weeks of intensive timetabled teaching and assessment to commence four weeks after the end of the second semester assessment period, and to conclude about one week before the start of the next academic year.

The 'maximum period of registration' is equivalent to a period which is 150% of the curriculum's normative period of study as specified in the degree regulations, provided that where this results in a residual fraction of an academic year, the fractional period shall be extended to one full academic year.

'Degree curriculum' means the entire study requirements for the award of an undergraduate degree.

'Major programme' means the study requirements, including a capstone experience, for a single major area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 72 credits nor more than 96 credits, as prescribed in the syllabuses for a degree curriculum.

'Minor programme' means the study requirements for a single minor area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 36 credits nor more than 48 credits, as prescribed in the syllabuses for a degree curriculum.

'Professional core' refers to the study requirements, including a capstone experience, prescribed in the regulations and syllabuses for disciplinary studies in degree curricula which are not structured as major/minor programmes for reasons relating to professional qualification and/or accreditation.

'Course' means a course of study, with a credit value expressed as a number of credit-units

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These regulations are applicable to candidates admitted from 2014-15 onwards to the first year of first degree curricula under the 4-year '2012 curriculum', the 2-year curriculum in respect of the BSc(IM), the 5-year curriculum in respect of the BA&BEd(LangEd), BEd&BSc, BEd&BSocSc, BSc(Sp&HearSc), and BNurs, and the 6-year curriculum in respect of the BChinMed, BDS and MBBS. Reference in these regulations to the powers of the Boards of Faculties shall be applicable to Senate Boards of Studies which administer first degree curricula.

⁽The Regulations for First Degree Curricula applicable to cohorts admitted in 2012-13 and 2013-14 under the 4-year '2012 curriculum' can be found in the Calendar for 2013-14, and in the Calendar for 2012-13 for the cohort admitted in 2012-13 under the 3-year '2010 curriculum'.)

as specified in the syllabuses for a degree curriculum.

'Disciplinary elective course' or 'Disciplinary Elective' means any course offered in the same major or minor programme or the professional core which can be taken by candidates to fulfill the curriculum requirements as specified in the syllabuses of the degree curriculum.

'Elective course' or 'Elective' means any course offered within the same or another curriculum, other than compulsory courses in the candidate's degree curriculum, that can be taken by the candidate in order to complete the credit requirements of the degree curriculum.

'Capstone experience' refers to one or more courses within the major programme or professional core which are approved by the Board of the Faculty for the purpose of integrating knowledge and skills acquired, and which are prescribed in the syllabuses of the degree curriculum.

'Syllabus' means courses taught by departments, centres, and schools, offered under a degree curriculum.

'Prerequisite' means a course or a group of courses which candidates must have completed successfully or a requirement which candidates must have fulfilled before being permitted to take the course in question.

'Corequisite' means a course which candidates must take in conjunction with the course in question.

'Credits' or 'credit-units' means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

'Grade Points' are standardized measurements of candidates' academic achievement in courses taken to satisfy the requirements of the degree curriculum and are expressed as a scale prescribed in these regulations.

'Grade Point Average' is a numerical measure of a candidate's academic achievement over a specified period of time. Each course attempted (including each failed course) is assigned a numerical value, with all courses carrying equal weighting. This numerical value is the product of grade points earned for the course and the credit value of that course. The 'Grade Point Average' is the sum of these numerical values divided by the total number of credits attempted:

$$GPA = \frac{\sum_{i} Course \ Grade \ Point \times Course \ Credit \ Value}{\sum_{i} Course \ Credit \ Value}$$

(where 'i' stands for all passed and failed courses taken by the student over a specified period)

'Semester Grade Point Average' or 'Semester GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) during a given semester.

'Year Grade Point Average' or 'Year GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) during a given academic year.

'Cumulative Grade Point Average' or 'Cumulative GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) at the time of calculation.

'Assessment' refers to judgment about the quality and extent to which a student has achieved the stated learning objectives or learning outcomes. It includes all types of assessment activities which allow for such a judgment to be made. For the purpose of interpreting the relevant provisions of the Ordinance and the Statutes and where appropriate, reference to 'examination' or 'examinations' in the Ordinance and the Statutes shall include

and cover all forms of 'assessment' and its related processes.

A 'transcript' refers to a transcript of the record of study of a candidate, issued by the Registry of the University.

UG 2 Advanced standing:

Advanced standing may be granted to candidates in recognition of studies completed successfully before admission to the curriculum. Candidates who are awarded Advanced Standing will not be granted any further credit transfer for those studies for which Advanced Standing has been granted. The amount of credits to be granted for advanced standing shall be determined by the Board of the Faculty, in accordance with the following principles:

- (a) at least half the number of credits of the degree curriculum normally required for award of the degree shall be accumulated through study at this University or from transfer of credits for courses completed at other institutions in accordance with Regulation UG 4(d); and
- (b) in accordance with Statute III.5 and notwithstanding the granting of advanced and/or transfer credits, a minimum of two semesters of study at this University shall be required before a candidate is considered for the award of a first degree, other than a degree in medicine or surgery, and a minimum of four semesters of study at this University shall be required before a candidate is considered for a first degree in medicine or surgery.

Credits granted for advanced standing shall not normally be included in the calculation of the GPA unless permitted by the Board of the Faculty but will be recorded on the transcript of the candidate.

UG 3 Period of study:

The period of study of the curriculum shall be specified in the regulations governing the degree. To be eligible for award of the degree, a candidate shall fulfill all curriculum requirements within the maximum period of registration, unless otherwise permitted or required by the Board of the Faculty.

UG 4 Progression in curriculum:

- (a) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements is fewer than 24 credits.
- (b) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load for the normative period of study specified in the curriculum regulations, save as provided for under UG4(c).
- (c) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load for the maximum period of registration specified in the curriculum regulations.
- (d) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits may be recorded in the transcript of the candidate, but the

results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.

- (e) Unless otherwise permitted by the Board of the Faculty, candidates shall be recommended for discontinuation of their studies if they have:
 - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
 - (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
 - (iii) exceeded the maximum period of registration specified in the regulations of the degree.

UG 5 Requirements for graduation:

To be eligible for admission to the degree, candidates shall fulfill the following requirements in addition to the requirements prescribed in the regulations and syllabuses governing the degree curriculum within the maximum period of registration:

- (a) successful completion of 12 credits in English language enhancement, including 6 credits in Core University English² and 6 credits in an English in the Discipline course³;
- (b) successful completion of 6 credits in Chinese language enhancement⁴;
- (c) successful completion of 36 credits of courses in the Common Core Curriculum, comprising at least one and not more than two courses from each Area of Inquiry⁵ with not more than one course from the same Area of Inquiry being selected within one academic year except where candidates are required to make up for failed credits; and
- (d) successful completion of a capstone experience as specified in the syllabuses of the degree curriculum.

UG 6 Exemption:

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Candidates may be exempted, with or without special conditions attached, from any of the requirements in UG 5 by the Senate in exceptional circumstances. Candidates who are so

² Candidates who have achieved Level 5** in English Language in the Hong Kong Diploma of Secondary Education Examination, or equivalent, may at the discretion of the Faculty be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

³ (a) To satisfy the English in the Discipline (ED) requirement, candidates who have passed the ED course for a Major but subsequently change that Major are required to pass the ED course for the new Major, or either of the double Majors finally declared upon graduation irrespective of whether the second Major is offered within or outside of the candidates' home Faculty.

⁽b) Candidates declaring double Majors can, if they fail in the ED course for one of the Majors, either (i) re-take and successfully complete that failed ED course, or (ii) successfully complete the ED course for the other Major, irrespective of whether the Major is offered within or outside of the candidates' home Faculty.

⁽c) Candidates who undertake studies in double Majors or double degrees are not required to take a second ED course but may be advised by the Faculty to do so.

⁴ Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

⁵ Candidates registered for double degree studies are required to successfully complete 24 credits of courses in the Common Core Curriculum, selecting one course from each Area of Inquiry, within the curriculum of the first degree, as appropriate.

exempted must replace the number of exempted credits with courses of the same credit value.

UG 7 Assessment:

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only passed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates suspended under Statute XXXI shall not be allowed to take, present themselves for, and participate in any assessments during the period of suspension, unless otherwise permitted by the Senate.
- (d) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (e) Candidates are required to make up for failed courses in the following manner as prescribed in the curriculum regulations:
 - (i) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or
 - (ii) re-submitting failed coursework, without having to repeat the same course of instruction; or
 - (iii) repeating the failed course by undergoing instruction and satisfying the assessments;
 - (iv) for elective courses, taking another course *in lieu* and satisfying the assessment requirements.
- (f) There shall be no appeal against the results of examinations and all other forms of assessment.

UG 8 Grading system:

(a) The grades, their standards and the grade points for assessment shall be as follows⁶:

Grade		Standard	Grade Point
A+	1		4.3
A	}	Excellent	4.0
A-	J		3.7
B+	1		3.3
В	}	Good	3.0
B-	J		2.7
C+	1		2.3
C	}	Satisfactory	2.0
C-	J	•	1.7
D+	1	Dogg	1.3
D	}	Pass	1.0
F		Fail	0

⁶ UG 8 is not applicable to the respective Professional Core of the BDS and MBBS curricula.

(b) Special permission may be given by Senate for courses in individual curricula to be graded as 'Pass', 'Fail' or 'Distinction'. Such courses will not be included in the calculation of the GPA.

UG 9 Honours classifications:

(a) Honours classifications shall be awarded in five divisions⁷: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the degree in accordance with the following Cumulative GPA scores, with all courses taken (including failed courses) carrying equal weighting:

<u>Class of honours</u>	CGPA range
First Class Honours	3.60 - 4.30
Second Class Honours	(2.40 - 3.59)
Division One	3.00 - 3.59
Division Two	2.40 - 2.99
Third Class Honours	1.70 - 2.39
Pass	1.00 - 1.69

- (b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the degree may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.05 Grade Point.
- (c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.

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⁷ UG 9 is not applicable to the BChinMed, BDS and MBBS curricula.

REGULATIONS FOR FIRST DEGREE CURRICULA

Regulations for First Degree Curricula (for students admitted under the 4-year '2012 curriculum' to the first year of fist degree curricula in 2012-13 and 2013-14 and students admitted directly to the third year in 2014-15)

(See also General Regulations)

UG 1 Definitions:

For the purpose of regulations and syllabuses for all first degree curricula unless otherwise defined —

An 'academic year' comprises two semesters, the first semester to commence in September and end in December, and the second semester to commence in January and end in May/June, on dates as prescribed by the Senate. It includes, normally at the end of each semester, a period during which candidates are assessed. For some curricula, a 'summer semester' may be organized in addition to the normal two semesters. Clinical curricula have extended semesters.

A 'summer semester' normally comprises seven to eight weeks of intensive timetabled teaching and assessment to commence four weeks after the end of the second semester assessment period, and to conclude about one week before the start of the next academic year.

The 'maximum period of registration' is equivalent to a period which is 150% of the curriculum's normative period of study as specified in the degree regulations, provided that where this results in a residual fraction of an academic year, the fractional period shall be extended to one full academic year.

'Degree curriculum' means the entire study requirements for the award of an undergraduate degree.

'Major programme' means the study requirements, including a capstone experience, for a single major area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 72 credits nor more than 96 credits, as prescribed in the syllabuses for a degree curriculum.

'Minor programme' means the study requirements for a single minor area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 36 credits nor more than 48 credits, as prescribed in the syllabuses for a degree curriculum.

'Professional core' refers to the study requirements, including a capstone experience, prescribed in the regulations and syllabuses for disciplinary studies in degree curricula which are not structured as major/minor programmes for reasons relating to professional qualification and/or accreditation.

'Course' means a course of study, with a credit value expressed as a number of credit-units

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These regulations are applicable to candidates admitted under the 4-year '2012 curriculum' (the 2-year curriculum in respect of the BSc(IM), the 5-year curriculum in respect of the BA&BEd(LangEd), BEd&BSc, BEd&BSocSc, BSc(Sp&HearSc), and BNurs, and the 6-year curriculum in respect of the BChinMed, BDS and MBBS) to the first year of first degree curricula in 2012-13 and 2013-14. Reference in these regulations to the powers of the Boards of Faculties shall be applicable to Senate Boards of Studies which administer first degree curricula.

⁽Please refer to the Calendar for 2011-12 for the Regulations for First Degree Curricula applicable to cohorts admitted in 2010-11 and 2011-12 under the 3-year '2010 curriculum'.)

as specified in the syllabuses for a degree curriculum.

'Disciplinary elective course' or 'Disciplinary Elective' means any course offered in the same major or minor programme or the professional core which can be taken by candidates to fulfill the curriculum requirements as specified in the syllabuses of the degree curriculum.

'Elective course' or 'Elective' means any course offered within the same or another curriculum, other than compulsory courses in the candidate's degree curriculum, that can be taken by the candidate in order to complete the credit requirements of the degree curriculum.

'Capstone experience' refers to one or more courses within the major programme or professional core which are approved by the Board of the Faculty for the purpose of integrating knowledge and skills acquired, and which are prescribed in the syllabuses of the degree curriculum.

'Syllabus' means courses taught by departments, centres, and schools, offered under a degree curriculum.

'Prerequisite' means a course or a group of courses which candidates must have completed successfully or a requirement which candidates must have fulfilled before being permitted to take the course in question.

'Corequisite' means a course which candidates must take in conjunction with the course in question.

'Credits' or 'credit-units' means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

'Grade Points' are standardized measurements of candidates' academic achievement in courses taken to satisfy the requirements of the degree curriculum and are expressed as a scale prescribed in these regulations.

'Grade Point Average' is a numerical measure of a candidate's academic achievement over a specified period of time. Each course attempted (including each failed course) is assigned a numerical value, with all courses carrying equal weighting. This numerical value is the product of grade points earned for the course and the credit value of that course. The 'Grade Point Average' is the sum of these numerical values divided by the total number of credits attempted:

$$GPA = \frac{\sum_{i} Course \ Grade \ Point \times Course \ Credit \ Value}{\sum_{i} Course \ Credit \ Value}$$

(where 'i' stands for all passed and failed courses taken by the student over a specified period)

'Semester Grade Point Average' or 'Semester GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) during a given semester.

'Year Grade Point Average' or 'Year GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) during a given academic year.

'Cumulative Grade Point Average' or 'Cumulative GPA' is the GPA in respect of courses attempted by a candidate (including failed courses) at the time of calculation.

'Assessment' refers to judgment about the quality and extent to which a student has achieved the stated learning objectives or learning outcomes. It includes all types of assessment activities which allow for such a judgment to be made. For the purpose of interpreting the relevant provisions of the Ordinance and the Statutes and where appropriate, reference to 'examination' or 'examinations' in the Ordinance and the Statutes shall include

and cover all forms of 'assessment' and its related processes.

A 'transcript' refers to a transcript of the record of study of a candidate, issued by the Registry of the University.

UG 2 Advanced standing:

Advanced standing may be granted to candidates in recognition of studies completed successfully elsewhere before admission to the University. Candidates who are awarded Advanced Standing will not be granted any further credit transfer for those studies for which Advanced Standing has been granted. The amount of credits to be granted for advanced standing shall be determined by the Board of the Faculty, in accordance with the following principles:

- (a) at least half the number of credits of the degree curriculum normally required for award of the degree shall be accumulated through study at this University or from transfer of credits for courses completed at other institutions in accordance with Regulation UG 4(d); and
- (b) in accordance with Statute III.5 and notwithstanding the granting of advanced and/or transfer credits, a minimum of two semesters of study at this University shall be required before a candidate is considered for the award of a first degree, other than a degree in medicine or surgery, and a minimum of four semesters of study at this University shall be required before a candidate is considered for a first degree in medicine or surgery.

Credits granted for advanced standing shall not normally be included in the calculation of the GPA unless permitted by the Board of the Faculty but will be recorded on the transcript of the candidate.

UG 3 Period of study:

The period of study of the curriculum shall be specified in the regulations governing the degree. To be eligible for award of the degree, a candidate shall fulfill all curriculum requirements within the maximum period of registration, unless otherwise permitted or required by the Board of the Faculty.

UG 4 Progression in curriculum:

- (a) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements is fewer than 24 credits.
- (b) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load for the normative period of study specified in the curriculum regulations, save as provided for under UG4(c).
- (c) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load for the maximum period of registration specified in the curriculum regulations.
- (d) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The

number of transferred credits may be recorded in the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.

- (e) Unless otherwise permitted by the Board of the Faculty, candidates shall be recommended for discontinuation of their studies if they have:
 - failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
 - (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
 - (iii) exceeded the maximum period of registration specified in the regulations of the degree.

UG 5 Requirements for graduation:

To be eligible for admission to the degree, candidates shall fulfill the following requirements in addition to the requirements prescribed in the regulations and syllabuses governing the degree curriculum within the maximum period of registration:

- (a) successful completion of 12 credits in English language enhancement, including 6 credits in Core University English² and 6 credits in an English in the Discipline course³:
- (b) successful completion of 6 credits in Chinese language enhancement⁴;
- (c) successful completion of 36 credits of courses in the Common Core Curriculum, selecting not more than one course from the same Area of Inquiry within one academic year and at least one and not more than two courses from each Area of Inquiry⁵ during the whole period of study; and
- (d) successful completion of a capstone experience as specified in the syllabuses of the degree curriculum.

UG 6 Exemption:

Candidates may be exempted, with or without special conditions attached, from any of the

² Candidates who have achieved Level 5** in English Language in the Hong Kong Diploma of Secondary Education Examination, or equivalent, may at the discretion of the Faculty be exempted from this requirement and should take an elective course in lieu, see Regulation UG6.

³ (a) To satisfy the English in the Discipline (ED) requirement, candidates who have passed the ED course for a Major but subsequently change that Major are required to pass the ED course for the new Major, or either of the double Majors finally declared upon graduation irrespective of whether the second Major is offered within or outside of the candidates' home Faculty.

⁽b) Candidates declaring double Majors can, if they fail in the ED course for one of the Majors, either (i) re-take and successfully complete that failed ED course, or (ii) successfully complete the ED course for the other Major, irrespective of whether the Major is offered within or outside of the candidates' home Faculty.

⁽c) Candidates who undertake studies in double Majors or double degrees are not required to take a second ED course but may be advised by the Faculty to do so.

⁴ Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

⁵ Candidates registered for double degree studies are required to successfully complete 24 credits of courses in the Common Core Curriculum, selecting one course from each Area of Inquiry, within the curriculum of the first degree, as appropriate.

requirements in UG 5 by the Senate in exceptional circumstances. Candidates who are so exempted must replace the number of exempted credits with courses of the same credit value.

UG 7 Assessment:

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only passed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (d) Candidates are required to make up for failed courses in the following manner as prescribed in the curriculum regulations:
 - (i) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or
 - (ii) re-submitting failed coursework, without having to repeat the same course of instruction; or
 - (iii) repeating the failed course by undergoing instruction and satisfying the assessments; or
 - (iv) for elective courses, taking another course *in lieu* and satisfying the assessment requirements.
- (e) There shall be no appeal against the results of examinations and all other forms of assessment.

UG 8 Grading system:

(a) The grades, their standards and the grade points for assessment shall be as follows⁶:

Grade		Standard	Grade Point
A+	ו		4.3
A	}	Excellent	4.0
A-	J		3.7
B+	1		3.3
В	}	Good	3.0
В-	J		2.7
C+	1		2.3
C	}	Satisfactory	2.0
C-	J	•	1.7
D+	1	Dogg	1.3
D	ſ	Pass	1.0
F		Fail	0

(b) Special permission may be given by Senate for courses in individual curricula to be graded as 'Pass', 'Fail' or 'Distinction'. Such courses will not be included in the

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⁶ UG 8 is not applicable to the BDS and MBBS curricula.

UG 9 Honours classifications:

(a) Honours classifications shall be awarded in five divisions⁷: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the degree in accordance with the following Cumulative GPA scores, with all courses taken (including failed courses) carrying equal weighting:

<u>Class of honours</u>	<u>CGPA range</u>
First Class Honours	3.60 - 4.30
Second Class Honours	(2.40 - 3.59)
Division One	3.00 - 3.59
Division Two	2.40 - 2.99
Third Class Honours	1.70 - 2.39
Pass	1.00 - 1.69

- (b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the degree may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.05 Grade Point.
- (c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.

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⁷ UG 9 is not applicable to the BChinMed, BDS and MBBS.

Teaching Weeks

SCIENCE

Teaching Weeks 2014-2015 for Undergraduate and Taught Postgraduate Students

	SUN	MON	TUE	WED	THUR	FRI	SAT	-		FIRST SEMESTER: SEP 1 - DEC 23, 2014
	7	1 8	2 [9]	3 10	4 11	5 12	6 13		1 2	First Day of Teaching: Sep 1, 2014
SEP-14	14	15	16	17	18	19	20		3	
	21	22	23	24	25	26	27		4	
	28	29	30	F13	[2]	3	4	Н	5	
	5	6	7	[1] 8	[<mark>2</mark>] 9	10	4 11		6	
OCT-14	12	13	14	15	16	17	18		7 (Reading)	Reading/ Field Trip Week: Oct 13 - 18, 2014
	19	20	21	22	23	24	25		8	
	26	27	28	29	30	31	1	H	9	
	2	3	4	5	6	7	8		10	
NOV-14	9	10	11	12	13	14	15		11	
101-14	16	17	18	19	20	21	22		12	
	23 30	24	25	26	27	28	29		13	Last Day of Teaching: Nov 29, 2014
	30	1	2	3	4	5	6	H	14 (Revision)	Revision Period: Dec 1 - 5, 2014
	7	8	9	10	11	12	13		15	Assessment Period: Dec 6 - 23, 2014
DEC-14	14	15	16	17	18	19	20		16	
	21	22	23	(24)	[25]	[26]	27		17	
	28	29	30	<31>	[1]	2	3		18 (Break)	
	4	5	6	7	8	9	10		19 (Break)	
JAN-15	11	12	13	14	15	16	17	,		$\underline{\textbf{SECOND SEMESTER: JAN 19-MAY 30, 2015}}$
	18	19	20	21	22	23	24			First Day of Teaching: Jan 19, 2015
	25 1	26	27 3	28 4	<u>29</u> 5	30 6	31 7	H	22 23	
l	8	9	10	11	12	13	14		23	
FEB-15	15	16	17	<18>	[19]	[20]	[21]			Class Suspension Period for the Lunar New Year:
	22	23	24	25	26	27	28	Ц	-	Feb 19 - 25, 2015
	1 8	9	10	11	5 12	6 13	7 14		27 28 (Reading)	Reading/ Field Trip Week: Mar 9 - 14, 2015
MAR-15	15	(16)	17	18	19	20	21		28 (Reading) 29	Reading/ Field Trip Week. Wai 9 - 14, 2013
	22	23	24	25	26	27	28		30	
	29	30	31						31	
	5	[6]	[7]	1 8	2 9	[3] 10	[4] 11		32	
APR-15	12	13	14	15	16	17	18		33	
	19	20	21	22	23	24	25		34	
	26	27	28	29	30	F13	2	Н	35	I . D . CT . I' . M . 2 2015
	3	4	5	6	7	[1] 8	2 9			Last Day of Teaching: May 2, 2015 Revision Period: May 4 - 9, 2015
	10	11	12	13	14	15	16		37	Assessment Period: May 11 - 30, 2015
MAY-15	17	18	19	20	21	22	23		38	•
	24	[25]	26	27	28	29	30]	39	
	31	1	2	3	4	5	6		40 (Break)	
	7	8	9	10	11	12	13		41 (Break)	
JUN-15	14	15	16	17	18	19	[20]		42 (Break)	
	21	22	23	24	25	26	27	,		OPTIONAL SUMMER SEMESTER
	28	29	30	[1]	2	3	4	H	44	Jun 29 - Aug 22, 2015
	5	6	7	8	9	10	11		45	
JUL-15	12	13	14	15	16	17	18		46	
	19	20	21	22	23	24	25		47	
	26	27	28	29	30	31	1	H	48	
	2	3	4	5	6	7	8		49	
AUG-15	9	10	11	12	13	14	15		50	
A00-13	16	17	18	19	20	21	22]	51	
	23 30	24 31	25	26	27	28	29		52 (Break) 52 (Break)	
	30	31							J2 (DICAK)	
[] General	Holiday				Reading/ I	Field Trip	Week			
() Univers	ity Holida	v (Full Day	v)		Revision I	Period				
	-				1					
<> Univer	rsity Holid	ay (afterno	on only)	\bigcirc	Class Susp	ension Pe	eriod for the	Lun	nar New Year	

Assessment Period

Useful contacts and websites

SCIENCE

Useful contacts and websites

Faculty of Science Office Location : Ground Floor,

Chong Yuet Ming Physics Building

Tel : 3917 2683
Fax : 2858 4620
Email : science@hku.hk

Website : http://www.scifac.hku.hk/

(Please visit http://www.scifac.hku.hk/ for the latest updates of BSc courses, timetables, notices and forms)

Departments/School

Biochemistry Website : http://www.biochem.hku.hk/
Biological Sciences Website : http://www.biosch.hku.hk/

Chemistry Website : http://chem.hku.hk/

Earth Sciences Website : http://www.earthsciences.hku.hk/

MathematicsWebsite: http://www.math.hku.hk/PhysicsWebsite: http://www.physics.hku.hk/Statistics & Actuarial ScienceWebsite: http://www.saasweb.hku.hk/

Academic Advising Office Tel : 2219 4686

Website : http://aao.hku.hk

Academic Services Office Office Location : G4, Run Run Shaw Building

Tel : 2859 2433

Fax : 2540 1405

Email : asoffice@hku.hk

Website : http://www.asa.hku.hk/

Common Core courses Website : http://commoncore.hku.hk

HKU Worldwide Undergraduate

Exchange Programme

Website : http://www.als.hku.hk/admission/exchange/

Centre of Development and Tel : 2859 2305

Resources for Students (CEDARS) Website : http://cedars.hku.hk

University Health Service Tel : 2859 2501 (General enquiries)

2549 4686 (Medical appointments only)

Website : http://www.uhs.hku.hk/

Plagiarism Website : http://www.hku.hk/plagiarism