REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE[1] (BSc)

(See also General Regulations and Regulations for First Degree Curricula)

Terminology

Sc1 In these Regulations, and in the Syllabuses for the degree of Bachelor of Science, unless the context otherwise requires -

"Study programme" means a combination of core, elective and general education courses as specified in the syllabus, and approved by the Faculty Board.

"Science Course" means any course offered by the Faculty of Science and the Department of Biochemistry.

"Advanced course" means any level 2 and 3 course offered by the Faculty of Science or the Department of Biochemistry.

Admission to Bachelor of Science Degree

Sc2 To be eligible for admission to the degree of Bachelor of Science candidates

(a) shall comply with the General Regulations;

(b) shall comply with the Regulations for First Degree Curricula; and

(c) shall satisfy all the requirements of the curriculum in accordance with the regulations that follow and the syllabuses of the degree.

Length of Study

Sc3 The curriculum for the degree of Bachelor of Science shall normally require six semesters of full-time study, spread over three academic years, excluding summer semesters. Candidates shall not be permitted to complete the curriculum in more than five academic years, except with the approval of the Faculty Board.

Curriculum Requirements

Sc4 To complete the curriculum, candidates

(a) shall satisfy the requirements prescribed in UG3 of the Regulations for First Degree Curricula;

(b) shall take no fewer than 180 credits of different courses, in the manner specified in the syllabuses; and

(c) shall follow the required number of core and elective courses as prescribed in the syllabuses, normally equivalent to 60 credits for each year of study. For each semester, candidates shall select, no less than 24, nor more than 36 credits of courses. Should students wish to deviate from the prescribed programme structure or select fewer than 24 or more than 36 credits of courses in a semester, approval must be sought from the Dean via the Head of Department.

---

[1] For students admitted in 2007 or thereafter.

Selection of Courses

Sc5 Candidates select courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each academic year. Changes to the selection of course(s) may be made only during a period specified by the Faculty, normally in the first two teaching weeks of the semester to which the course begins. Such changes shall not be reflected in the transcripts of candidates. Requests to change after the specified period of a semester shall not be considered, and candidates withdrawing from any course without permission after the specified period of a semester shall be given a failed grade.

Assessment

Sc6 Candidates shall have passed a course if the Board of Examiners is satisfied by their performance in the assessment, which may be conducted in any one or any combination of the following manners: written examinations or tests, continuous assessment of performance, laboratory work, field work, research or project reports, or in any other manner as prescribed in the syllabuses. Grades shall be awarded in accordance with UG 5 of the Regulations for New Degree Curricula.

Sc7 Candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.

Sc8 Candidates who fail a course may retake the course and both grades shall be recorded on the transcript. In the calculation of the semester GPA, all credit-units attempted are counted. In the calculation of the cumulative GPA, only credits-units gained are counted.

Sc9 Candidates shall not be permitted to repeat a course for which they have received a pass grade for upgrading purposes.

Unsatisfactory Progress

Sc10 Candidates who have passed less than 36 credits of courses in any academic year or obtained a Semester or Year GPA of 1.2 or below may be required to discontinue their studies in accordance with General Regulation G12.

Absence from Examination

Sc11 Failure to take the examination as scheduled, normally results in automatic course failure. Candidates who are unable because of illness to be present at any examination of a course, may apply for permission to present themselves for examination at some other time. Any such application shall be made on the form prescribed within two weeks of the day of the examination.

Advanced Standing

Sc12 Advanced credits granted under UG2 of the Regulations for First Degree Curricula shall be recorded on the transcript of candidates but not included in the calculation of the cumulative GPA. Candidates with advanced standing credits shall normally have their degree classification determined separately by the Faculty Board.

Degree Classification

Sc13 To be eligible for the award of the degree of Bachelor of Science, candidates shall pass a minimum of 180 credits of courses, including

(a) 6 credits of courses in English language enhancement;
(b) 3 credits of course in Chinese language enhancement;
(c) a 3 credit course from those listed under the Humanities and Social Sciences studies;
(d) satisfactory completion of IT proficiency requirement, as specified by the Board; and
(e) at least 90 credits of Science courses, of which no less than 60 credits must be gained from advanced courses;
(f) all required courses as prescribed in the major and minor curriculum; and Faculty elective courses.

Sc14 The degree of Bachelor of Science 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 Faculty Board and a list of candidates who have successfully completed all the degree requirements shall be posted on Faculty noticeboards.

SYLLABUSES FOR THE DEGREE OF BACHELOR OF SCIENCE

(Refer to http://www.hku.hk/science for updates)

MAJORS AND MINORS OFFERED TO BSC STUDENTS*

The following majors/minors are available for BSc students in 2008-2009.

Science Majors
Astronomy **
Biochemistry
Biology
Biotechnology
Chemistry
Earth Sciences
Ecology & Biodiversity
Environmental Protection
Food & Nutritional Science
Materials Science
Mathematics
Mathematics / Physics
Microbiology #
Physics
Risk Management
Statistics

Arts Majors ^
American Studies
Chinese History and Culture
Chinese Language and Literature
Chinese Studies
Comparative Literature
Cross-Cultural Studies in English #
English Studies
European Studies
Fine Arts
French
Geography @
German
History
Human Language Technology
Japanese Studies
Language and Communication
Linguistics
Linguistics and Philosophy
Modern China Studies
Music
Philosophy
Spanish +
Translation

Science Minors
Actuarial Studies
Astronomy
Biochemistry
Biology
Biotechnology
Chemistry
Earth Sciences
Ecology & Biodiversity
Environmental Protection
Food & Nutritional Science
General Science (*only available for students outside the Faculty of Science*)
Global Climate Change #
Mathematics
Microbiology #
Physics
Risk Management
Statistics

Business and Economics Majors ^
Economics
Finance

Business and Economics Minors
Business
Economics
Finance

Education Minors
Applied Child Development
Education
Information Management

Engineering Major ^
Computer Science **

Engineering Minor
Computer Science

Arts Minors
American Studies
Arabic
Chinese History and Culture
Chinese Language and Literature
Chinese Studies
Comparative Literature
Cross-Cultural Studies in English
English Studies
European Studies
Fine Arts
French
Geography [@]
German
History
Italian
Japanese Culture
Japanese Language
Korean
Language and Communication
Linguistics
Modern China Studies
Music
Philosophy
Portuguese
Spanish
Swedish
Thai
Translation

Social Sciences Majors ^
Criminal Justice
Geography [#]
Global Studies
Media and Cultural Studies
Politics and Public Administration
Psychology
Public and Social Administration
Social Work and Social Administration
Sociology

Social Sciences Minors
Criminal Justice
Family and Child Studies
Geography [#]
Global Studies
Human Resource Management
International Business [++]
Journalism and Media Studies
Media and Cultural Studies
Politics and Public Administration
Psychology
Public and Social Administration
Social Work and Social Administration
Sociology

Human Performance Major ^
Exercise Science

Human Performance Minor
Exercise Science

^ *non-science major can only be taken by BSc students as 2nd major*
[+] *only offered for students admitted in 2006-07 or thereafter*
[@] *only offered for students admitted in 2006-07 or before*
[#] *only offered for students admitted in 2007-08 or thereafter*
** *only offered for students admitted in 2008-09 or thereafter*
[++] *only offered for students admitted in 2007-08 or before*

* *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 major or/and minor in order to satisfy the degree graduation requirements. For the same course which appears in 2 or more majors or minors will only be counted once.*

Note: Details of the courses and majors/minors are provided by the offering Faculty / Department. Please contact the relevant Faculty / Department for further information or updates.

Major in Astronomy [1] (for students admitted to the first year in 2008 or thereafter)

The 21st century is the golden age for astronomy as space-based telescopes are beginning to explore the Universe in all parts of the electromagnetic spectrum, including X-ray, ultraviolet, and infrared. The Major in Astronomy is intended for students who would like to acquire a well-rounded foundation on the subject. In addition to preparing students for postgraduate studies as professional astronomers, astronomy training can also 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.

Minimum Entry Requirement : AL / AS Physics or AL Engineering Science; and HKCEE Additional Mathematics or AS Mathematics and Statistics or AL Pure Mathematics; or a pass in PHYS0114 Fundamental physics I and PHYS0115 Fundamental physics II or equivalent

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Minor in Astronomy

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
Two of the following three courses:		
BIOL0602	Origins of life and astrobiology	3
PHYS0001	Nature of the universe I: introduction to observational astronomy and the solar system	3
PHYS0002	Nature of the universe II: stars, galaxies and cosmology for beginners	3
Plus at least 6 credits of the following courses:		
MATH1805	University mathematics B	6
PHYS1315	Method in physics I	6
Plus at least 6 credits of the following courses:		
PHYS1414	General physics I	6
PHYS1415	General physics II	6
PHYS1417	Basic physics	6
2. Advanced level courses (48 credits)		
PHYS2021	The Physical universe	6
PHYS2022	Observational astronomy	6
PHYS2627	Introductory quantum physics [2]	6
Plus at least 12 credits of the following courses, subject to prerequisite requirements.		
MATH2601	Numerical analysis	6
PHYS2222	Wave and optics	6
PHYS2227	Laser & spectroscopy	6
PHYS2321	Introductory electromagnetism	6
PHYS2322	Statistical mechanics and thermodynamics	6
PHYS2323	Introductory quantum mechanics	6
PHYS2325	Theoretical physics	6
PHYS2626	Introductory classical mechanics	6
Plus at least 12 credits of the following courses, subject to prerequisite requirements.		
PHYS2039	Principles of astronomy	6
PHYS3031	Astrophysics	6
PHYS3033	General relativity	6
PHYS3035	Stellar atmosphere	6
PHYS3036	Interstellar medium	6
PHYS3037	Selected topics in astrophysics	6
PHYS3038	Planetary science	6
PHYS3040	Stellar physics	6

Plus at least 6 credits of advanced level Physics courses (PHYS2000 or PHYS3000 or PHYS6000 level), subject to prerequisite requirements.

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-learning experience to fulfill the experiential learning requirement:

-	PHYS2533	Directed studies in physics	6
-	PHYS3531	Physics project	12
-	PHYS3988	Physics internship	6
-	SCNC2005	Career development for science students	(non-credit bearing)
-	Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
-	Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level physics course (PHYS2000 or PHYS3000 or PHYS6000 level)

Note: [1] For students having major-major, or major-minor combinations of Astronomy-Physics, a major-major combination of Astronomy-Mathematics/Physics, a set of replacement courses from the Departments of Mathematics and Physics will be made available so that there will be no overlap with the core courses in this major.

[2] Students may consider taking PHYS2627 as early as possible to allow for maximum flexibility in course selection for advanced level courses.

Major in Biochemistry
(for students admitted to the first year in 2007 or thereafter)

Biochemistry, strengthened with molecular biology, is a field with enormous applications to our daily lives. It also is a discipline of sublime fascination. Our understanding of the biochemical bases of various life processes has greatly improved human welfare, particularly the medical and nutritional aspects. Further advances in this rapidly expanding field of knowledge, including building and establishing new conceptual frameworks, development of novel methodologies and techniques, should pave way to even more spectacular insights into nature and lead to a better control of our destiny.

The Major in Biochemistry offered by the Department of Biochemistry is designed to provide students with both basic and advanced knowledge in modern biochemistry and molecular biology. Our goal is to develop and equip students with enough critical thinking and analytical skills so that they can embark on a career in biochemical sciences.

Minimum Entry Requirement : AL Chemistry or a pass in CHEM0004 Fundamental chemistry or equivalent
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Minor in Biochemistry

Required courses (72 credits)

		Credits
1.	**Introductory level courses (18 credits)**	
BIOC1001	Basic biochemistry	6
BIOC1003	Introduction to molecular genetics	6
CHEM1406	Basic organic chemistry **OR** CHEM1401 Fundamentals of organic chemistry	6
2.	**Advanced level courses (48 credits)**	
	At least 48 credits of the following courses:	
BIOC2601	Metabolism	6
BIOC2603	Principles of molecular genetics	6
BIOC2604	Essential techniques in biochemistry and molecular biology	6
BIOC3608	Introduction to bioinformatics	6
BIOC3610	Advanced biochemistry I	6
BIOC3611	Advanced biochemistry II	6
BIOC3613	Molecular biology of the gene	6
BIOC3615	Advanced techniques in biochemistry & molecular biology	6
BIOL2301	Protein structure and function	6
3.	**Experiential learning requirement (6 credits)** *	
	Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:	
- BIOC2616	Directed studies in biochemistry	6
- BIOC3614	Biochemistry project	12
- BIOC3988	Biochemistry internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra- ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biochemistry course (BIOC2000 or BIOC3000 level)

Major in Biology (for students admitted to the first year in 2008 or thereafter)

Biology has developed into a broad and diverse field of study. This Major provides students with a solid foundation in key biological subject areas, and then allows freedom to choose from a wide variety of interesting courses in year two and three. Students may select courses on molecular, physiological or organismal biology, plus applied aspects such as biotechnology, conservation, food science and environmental protection.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Major in Biotechnology;
Ecology & Biodiversity;
Environmental Protection;
Microbiology
Minor in Biology;
Biotechnology;
Ecology & Biodiversity

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
BIOL1122	Functional biology	6
Plus at least 12 credits of the following courses:		
BIOL0129	Introductory microbiology	3
BIOL0603	Ecology and evolution	3
BIOL0604	Evolutionary diversity	6
BIOL1106	Genetics	3

(students are strongly recommended to take "BIOL1125 Introduction to biochemistry" as an elective)

2. Advanced level courses (48 credits)		
BIOL2303	Introduction to molecular biology	6
Plus	42 credits of BIOL2000 or 3000 level course, with at least 18 credits at 3000 level	

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological sciences internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Major in Biotechnology
(for students admitted to the first year in 2008 or thereafter)

As the 21st Century opens, advances in biotechnology are accelerating at a remarkable pace. There are many exciting discoveries that have improved modern society, in terms of health, nature and economic development. This Major will first equip you with a solid background in molecular biology, microbiology, biochemistry and cell biology. Based on your interests, you will then further acquire knowledge in the specialized fields of medicine, diagnostics, agriculture, aquaculture, etc, from the advanced courses. Employment opportunities in various sectors of industry and Government, including R&D, manufacturing, sales, and customer service, are available to our students.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Major in Biology;
Minor in Biology;
Biotechnology

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
BIOL1125	Introduction to biochemistry	6
BIOL0129	Introductory microbiology	3
BIOL1106	Genetics	3
BIOL1122	Functional biology	6
Alternative course possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL0128	Biological techniques, instrumentation and data processing	6
2. Advanced level courses (48 credits)		
BIOL2115	Cell biology & cell technology	6
BIOL2301	Protein structure and function	6
BIOL2303	Introduction to molecular biology	6
BIOL3315	Animal biotechnology	6
BIOL3316	Plant biotechnology	6
BIOL3317	Microbial biotechnology	6
Plus at least 12 credits of the following courses:		
BIOL2111	Molecular microbiology	6
BIOL2112	Plant physiology	6
BIOL2116	Genetics I	6
BIOL2203	Reproduction & reproductive biotechnology	6
BIOL2205	Basic immunology	6
BIOL2207	Endocrinology	6
BIOL2209	Developmental biology	6
BIOL2215	Animal physiology	6
BIOL2217	General parasitology	3
BIOL2302	Fermentation technology	6
BIOL2515	Food microbiology	6
BIOL3212	Applied immunology	6
BIOL3214	General virology	6
BIOL3307	Biotechnology industry	6
BIOL3522	Nutrigenomics	3
3. Experiential learning requirement (6 credits) *		
Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:		
- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological sciences internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Major in Chemistry (for students admitted to the first year in 2007 or thereafter)

The dictionary defines chemistry as "the scientific study of the structure of substances, how they react when combined or in contact with one another, and how they behave under different conditions". How chemists actually do this to investigate the properties and reactions of matter vary widely and are constantly undergoing change as new methods are discovered, new equipment is invented, and new techniques are developed. Chemistry is a central science, which interacts with many other disciplines. The aim of this Major is to provide students with a solid training in the basic areas of chemistry such as physical, inorganic, organic, applied and analytical chemistry. Through a variety of training, the Major can equip students with skills and experience in both theoretical and experimental investigations that are very important for their future career goals in the hi-tech and knowledge-based economy.

Minimum Entry Requirement : AL Chemistry or equivalent or a pass in CHEM0004 Fundamental chemistry
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Minor in Chemistry

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
CHEM1002	Chemistry: principles and concepts	6
CHEM1003	Chemistry: the molecular world	6
CHEM1004	Chemistry: an experimental science I	6
2. Advanced level courses (48 credits)		
CHEM2202	Chemical instrumentation	6
CHEM2302	Intermediate inorganic chemistry	9
CHEM2402	Intermediate organic chemistry	9
CHEM2503	Intermediate physical chemistry	9
CHEM2510	Principles and applications of spectroscopic and analytical techniques	6

Plus at least 9 credits of advanced level Chemistry courses (CHEM2000 or CHEM3000 level) of which 6 credits must be at CHEM3000 level, subject to prerequisite requirements. [1]

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- CHEM2111	Directed studies in chemistry	6
- CHEM3105	Chemistry project	12
- CHEM3988	Chemistry internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level chemistry course (CHEM2000 or CHEM3000 level)

Note: [1] Students who wish to specialize in a certain area are recommended to choose courses from the following lists.
(a) For students who are interested in Analytical Chemistry: CHEM2102, CHEM2207, CHEM3203, CHEM3204.
(b) For students who are interested in Applied Chemistry: CHEM2103, CHEM3107, CHEM3110, CHEM3204.
(c) For students who are interested in Medicinal Chemistry: CHEM3403, CHEM3404, CHEM3405, CHEM3407.
(d) For students who are interested in Pure Chemistry: CHEM3106, CHEM3303, CHEM3403, CHEM3504/CHEM3513.

Major in Earth Sciences
(for students admitted to the first year in 2008 or thereafter)

In Earth Sciences, we study the nature and evolution of our planet. Geoscientists use their knowledge to increase our understanding of Earth processes and resources to improve the quality of human life. The Earth Science Major offers students an opportunity to learn about local and regional geological and environmental problems. The primary objective is to give students a robust training in the basics of Earth sciences as well as technical skills in certain specialized areas. Both theoretical and applied subjects such as mineralogy (the study of minerals), petrology (the study of rocks), geophysics, geochemistry, surficial processes, sedimentology, earth history, structural geology, fieldwork, regional geology, earth resources, environmental geology, hydrogeology and engineering geology are offered.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Minor in Earth Sciences

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
EASC0105	Earth through time	6
EASC0116	Introduction to physical geology	6
EASC0118	Blue planet	6
2. Advanced level courses (48 credits)		
Any	48 credits of advanced-level Earth Sciences courses [1]:	
3. Experiential learning requirement (6 credits) *		

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- EASC2301	Field camps	6
- EASC2307	Directed studies in earth sciences	6
- EASC3308	Earth sciences project	12
- EASC3988	Earth sciences internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level earth sciences course (EASC2000 or EASC3000 level)

Note: [1] Students may optionally follow one of the following themes in Earth Sciences:

(a) Geology theme

Objective: for students demanding an education in the principles and practice of geology. The curriculum is designed to prepare students to become a practicing geologist.

EASC2108; EASC2109; EASC2113; EASC2124; EASC2125; EASC2126; plus any 12 credits advanced level Earth Sciences courses (EASC2000 or EASC3000 level)

Students intending for a career in engineering geology are advised to take the following courses as electives: EASC2004; EASC2201; EASC3202; EASC3203

Students intending for a career in mining geology are advised to take the following course as elective: EASC3133

(b) Environmental Geology theme

Objective: for students interested in environmental geology, application of chemistry and physics to studying pollution and environmental toxicology.

EASC2112; EASC2126; EASC2127; EASC2130; EASC2201; EASC3133; plus any 12 credits advanced level Earth Sciences courses (EASC2000 or EASC3000 level)

(c) Atmospheric and Oceanic Studies theme

Objective: for students interested in studying the dynamics of atmospheres and oceans.
Minimum requirements: EASC2005; EASC2127; EASC2128; EASC2129; EASC2130; EASC2131; plus any 12 credits advanced level Earth Sciences courses (EASC2000 or EASC3000 level)

Major in Ecology & Biodiversity
(for students admitted to the first year in 2008 or thereafter)

Understanding biological diversity, the relationships between organisms and their environments, and how humans interact with both is critical for conserving the social and economic benefits yielded by the natural world, without irreversibly destroying or degrading it. This Major explores the biodiversity of microorganisms, plants and animals, with particular reference to Hong Kong and Southeast Asia. Natural ecological interactions between these organisms and their environment are considered, along with how the problems associated with environmental degradation and management can be approached from a scientific viewpoint. There are many opportunities, both within Hong Kong and internationally, for graduates in this field.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Major in Biology;
Minor in Ecology & Biodiversity;

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
BIOL0601	Ecology of Hong Kong	3
BIOL0603	Ecology and evolution	3
BIOL0604	Evolutionary diversity	6
BIOL0605	Ecology field course	3
Plus at least 3 credits of the following courses:		
BIOL0120	The gene	3
BIOL0126	Fundamentals of biology	6
BIOL0129	Introductory microbiology	3
BIOL1106	Genetics	3
CHEM1007	Basic chemistry for biological sciences	6
EASC0105	Earth through time	6
2. Advanced level courses (48 credits)		
BIOL2608	Biometrics	6
BIOL2611	Systematics & phylogenetics	6
BIOL2612	Conservation biology	6
Plus at least 30 credits of the following courses [1]:		
BIOL2210	Evolution	6
BIOL2606	Environmental microbiology	6
BIOL2607	Fish biology	6
BIOL2610	Biological oceanography	6
BIOL2615	Freshwater ecology	6
BIOL2616	Plant structure and evolution	3
BIOL2617	Coastal ecology	6
BIOL2618	How humans evolved	6
BIOL2619	Terrestrial ecology	6
BIOL3621	Fisheries and mariculture	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological sciences internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience.		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Note: [1] Students who wish to specialize in a certain area are recommended to choose courses from the following lists.
(a) For students who are interested in ecology & evolution: BIOL2210, BIOL2606, BIOL2615, BIOL2616, IOL2617, BIOL2618, BIOL2619.
(b) For students who are interested in marine biology: BIOL2607, BIOL2610, BIOL2617, BIOL3621.

Major in Environmental Protection
(for students admitted to the first year in 2008)

Humans are responsible for modification and degradation of nature yet it is only by human actions that we can protect habitats, ecosystems and the organisms that they contain for future generations. This Major helps students understand the causes of environmental degradation, and the ways in which they can be reduced or mitigated, including topics such as environmental impact assessment, ecotoxicology and bioremediation. Conservation biology and fisheries are also important components of this Major, which aims to provide the intellectual and practical skills needed for professionals working in environmental protection and related jobs.

Minimum Entry Requirement : AL or AS Chem or equivalent or a pass in CHEM0004 Fundamental chemistry
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Major in Biology;
Minor in Environmental Protection

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
CHEM1007	Basic chemistry for biological sciences	6
Plus at least 12 credits of the following courses:		
BIOL0129	Introductory microbiology	3
BIOL0601	Ecology of Hong Kong	3
BIOL0603	Ecology and evolution	3
BIOL0605	Ecology field course	3
CHEM1003	Chemistry: the molecular world	6
EASC0118	Blue planet	6
EASC0120	Earth, environmental and society	6
PHYS0628	Renewable energy	6
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses:		
CHEM1003	Chemistry: the molecular world	6
EASC0135	Introduction to atmospheres and oceans	3
EASC0136	Introduction to climatology	3
2. Advanced level courses (48 credits)		
BIOL2612	Conservation biology	6
BIOL3622	Environmental impact assessment	6
BIOL3624	Environmental monitoring and remediation techniques	6
CHEM2103	Chemical process industries and analysis	6
EASC2128	Earth-ocean-atmosphere interactions	6
Plus at least 18 credits of the following courses:		
BIOL2606	Environmental microbiology	6
BIOL2608	Biometrics	6
BIOL2610	Biological oceanography	6
BIOL2614	Environmental toxicology	6
BIOL2615	Freshwater ecology	6
BIOL2617	Coastal ecology	6
BIOL3621	Fisheries and mariculture	6
CHEM1406	Fundamental of organic chemistry	6
CHEM2102	Environmental chemistry	6
CHEM2202	Chemical instrumentation	6
CHEM2207	Food and water analysis	6
EASC2127	Global changes: anthropogenic impact	6
EASC2129	Physical oceanography	6
EASC3132	Earth resources	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological sciences internship	6
- EASC3308	Earth sciences project	12
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Major in Food & Nutritional Science
(for students admitted to the first year in 2008 or thereafter)

This is a challenging area of interdisciplinary study. The science of food and nutrition aims at improving the quality of life through the understanding of interactions among food, environment and the human body. This Major will appeal to those who have a genuine interest in the food system and/or nutrition. Beginning with a handful of core courses, you will be able to mix and match advanced courses that suit your personal interest, be it food product development and analysis, metabolism and body function or nutrient-gene interaction. In the era where food safety, and diet and health take up news headlines this Major has been extremely popular.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology and AL / AS Chemistry or equivalent or a pass in CHEM0004 Fundamental chemistry

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Minor in Food & Nutritional Science

Required courses (72 credits)

		Credits
1.	**Introductory level courses (18 credits)**	
BIOL1125	Introduction to biochemistry **OR** CHEM1406 Basic organic chemistry **OR** CHEM1401 Fundamentals of organic chemistry	6
BIOL1123	Food chemistry	3
BIOL1513	Food science laboratory	3
BIOL1514	Nutrition and metabolism	6

Alternative courses possible in the case of students taking Majors / Minors with an overlap of core courses:

BIOL0002	Introduction to food and nutritional science	3
BIOL1122	Functional biology	6

(this courses are also strongly recommended as electives)

2. Advanced level courses (48 credits)

BIOL2501	Food processing and preservation	6
BIOL2515	Food microbiology	6
BIOL2517	Food analysis	3
BIOL2518	Laboratory in nutritional science	3
BIOL2519	Essential nutrients & functional foods	6
BIOL3526	Advanced laboratory in nutritional science	3
BIOL3527	Food safety and quality management	6

Plus at least 15 credits of the following courses:

BIOL2205	Basic immunology	6
BIOL2207	Endocrinology	6
BIOL2215	Animal physiology	6
BIOL2302	Fermentation technology	6
BIOL2303	Introduction to molecular biology	6
BIOL2503	Grain production & utilization	6
BIOL2507	Meat and dairy science	6
BIOL2520	Food toxicology	3
BIOL2521	Food engineering	3
BIOL3516	Nutrition and brain function	3
BIOL3522	Nutrigenomics	3
BIOL3523	Principles of Chinese medicated diet	3
BIOL3524	Diet and disease	3
BIOL3525	Food product development	3
PBSL2229	Exercise physiology	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological sciences internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Major in Materials Science (for students admitted to the first year in 2008)

In the past few decades, we have witnessed a rapid development in technology that has had a major impact on the way we live. For example, synthetic fabrics have revolutionalized the clothing industry, and the on-board computers that helped guide the Apollo 11 mission to the moon were less powerful than the personal computers that sit on the desks in every office and in many homes today. All these changes were due to the fact that new materials were developed, which was the collective effort of scientists from many different areas. Materials science is an interdisciplinary subject that involves studies of the chemical and physical properties of materials. In this Major, students will be required to takes basic courses in chemistry and physics. The chemistry of materials synthesis (e.g. organic and inorganic materials) and their physical properties (mechanical, electrical, and optical properties) will be introduced. In the second and third years, advanced courses will focus on polymeric materials, nanomaterials, semiconducting materials, and their characterization techniques. In addition, students are required to take advanced physics and chemistry courses as electives. The Major is designed for students who are interested in materials science and technology for postgraduate studies.

Minimum Entry Requirement : 1. AL Chemistry; and AL / AS Physics or AL Engineering Science; or
2. a pass in PHYS0114 Fundamental physics I and PHYS0115 Fundamental physics II; and CHEM0004 Fundamental chemistry; or equivalent

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Nil

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
CHEM1002	Chemistry: principles and concepts	6
PHYS1417	Basic Physics	6
Plus at least 6 credits of the following courses:		
CHEM1003	Chemistry: the molecular world	6
CHEM1005	Introduction to materials science	6
PHYS1315	Methods in physics I	6
2. Advanced level courses (48 credits)		
CHEM2109	Introduction to materials chemistry	6
CHEM2510	Principles and applications of spectroscopic and analytical techniques	6
PHYS2627	Introductory quantum physics	6
Plus 12 credits of the following courses, of which at least 6 credits must be at the CHEM3000 level:		
CHEM2103	Chemical process industries and analysis	6
CHEM2202	Chemical instrumentation	6
CHEM3107	Interfacial science and technology	6
CHEM3110	Advanced materials	6
Plus 18 credits of the following physics courses:		
PHYS2221	Introductory solid state physics	6
PHYS2222	Waves and optics	6
PHYS2227	Laser & spectroscopy	6
PHYS2235	Physics of nanomaterials	6
PHYS2236	Device physics	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- CHEM2111	Directed studies in chemistry	6
- CHEM3105	Chemistry project	12
- CHEM3988	Chemistry internship	6
- PHYS2533	Directed studies in physics	6
- PHYS3531	Physics project	12
- PHYS3988	Physics internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level chemistry / physics course (CHEM2000 or PHYS2000 or CHEM3000 or PHYS3000 or PHYS6000 level)

Note: For students having major/major, or major/minor combinations of Materials Science / Chemistry, or Materials Science / Physics, a set of replacement courses from the Departments of Chemistry and Physics will be made available so that there will be no overlap with the core courses in this major.

Major in Mathematics (for students admitted to the first year in 2007 or thereafter)

Mathematics has been referred to as "our invisible culture". Most people agree mathematics finds applications ranging from traditional ones in the physical sciences and engineering to more recent ones in the life sciences, economics, finance and management. Yet, many are dazzled by achievements mathematics helps to bring about that they forget about mathematics itself! A Major in Mathematics provides a solid comprehensive undergraduate education in the subject and will nurture quantitative reasoning, logical and analytical thinking, meticulous care to work, ability to conceptualize, problem-solving skill and innovative imagination. Different specializations are possible with our diverse courses, which lead to careers in education, economics and finance, logistics, management, research and further studies, etc.

Minimum Entry Requirement[#] : 1. HKCEE Additional Mathematics and AS Mathematics and Statistics; or
2. AL Pure Mathematics; or
3. a pass in MATH0201 Basic calculus (for those with HKCEE Math only) or a pass in MATH1804 University mathematics A (for those with AS Math & Stat only)

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Major in Mathematics/Physics
Minor in Mathematics

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
MATH1001	Fundamental concepts of mathematics	6
MATH1111	Linear algebra	6
MATH1211	Multivariable calculus	6
2. Advanced level courses (48 credits)		
MATH2201	Introduction to mathematical analysis	6
MATH2301	Algebra I	6
MATH2401	Analysis I	6

Plus at least 18 credits of the following courses [1]:

MATH2304	Introduction to number theory	6
MATH2403	Functions of a complex variable	6
MATH2405	Differential equations	6
MATH2600	Discrete mathematics	6
MATH2601	Numerical analysis	6
MATH2603	Probability theory	6
MATH2901	Operational research I	6
MATH2904	Introduction to optimization	6
MATH2911	Game theory and strategy	6

Plus at least 12 credits of advanced level Mathematics courses (MATH2XXX or MATH3XXX level), subject to prerequisite requirements.

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- MATH2002	Mathematics seminar [2]	6
- MATH2999	Directed studies in mathematics	6
- MATH3988	Mathematics internship	6
- MATH3999	Mathematics project	12
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level mathematics course (MATH2XXX or MATH3XXX level)

Note: [#] Students with different mathematics background must consult the Department of Mathematics for advice on the bridging courses.

[1] Students who wish to specialize in a certain area are recommended to choose courses from the following lists.

(a) For students who are interested in pure mathematics: MATH2303, MATH2304, MATH2402, MATH2403, MATH3302, MATH3310, MATH3404, MATH3501, MATH3502.

(b) For students who are interested in computational mathematics, logistics, and/or operations research: MATH2303, MATH2600, MATH2601, MATH2603, MATH2901, MATH2904, MATH2905, MATH3602, MATH3902, MATH3903.

(c) For students who are interested in economics and finance, and plan to take some professional examinations in related fields: MATH2906, MATH2907, and non-mathematics courses BUSI1002, FINA1001, FINA2802, ECON0701, ECON2101, ECON2102.

[2] MATH2002 is for first year BSc students only.

Major in Mathematics/Physics [1]

(for students admitted to the first year in 2008 or thereafter)

The Major in Mathematics/Physics is intended for students who would like to acquire a solid foundation in both the subjects of physics and mathematics. This major is catered especially for students interested in the more theoretical aspects of physics. With the comprehensive training received, graduates from this major are expected to be well-prepared to go on further studies and to pursue careers in a many fields of science and engineering.

Minimum Entry Requirement[#] : 1. AL / AS Physics or AL Engineering Science; and
2. HKCEE Additional Mathematics and AS Mathematics and Statistics, or AL Pure Mathematics; or
3. a pass in PHYS0114 Fundamental physics I and PHYS0115 Fundamental physics II and pass in MATH0201 Basic calculus (for those with HKCEE only) or a pass in MATH1804 University mathematics A (for those with AS Math & Stat only)

Minimum Credit Requirement : 78 credits (24 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Major in Mathematics; Physics
Minor in Mathematics; Physics

Required courses (78 credits)

		Credits
1. Introductory level courses (24 credits) [2]		
MATH1111	Linear algebra	6
MATH1211	Multivariable calculus	6
PHYS1414	General physics I	6
PHYS1415	General physics II	6
2. Advanced level courses (48 credits) [3]		
MATH2201	Introduction to mathematical analysis	6
MATH2301	Algebra I	6
MATH2403	Functions of a complex variable	6
MATH2405	Differential equations	6
PHYS2321	Introductory electromagnetism	6
PHYS2322	Statistical mechanics and thermodynamics	6
PHYS2626	Introductory classical mechanics	6
PHYS2627	Introductory quantum physics [4]	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- MATH2002	Mathematics seminar [5]	6
- MATH2999	Directed studies in mathematics	6
- MATH3988	Mathematics internship	6
- MATH3999	Mathematics project	12
- PHYS2533	Directed studies in physics	6
- PHYS3531	Physics project	12
- PHYS3988	Physics internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level mathematics / physics course (MATH2XXX or MATH3XXX or PHYS2533 or PHYS3531 or PHYS3000 or PHYS6000 level)

Note: [#] Students with different mathematics background must consult the Department of Mathematics for advice on the bridging courses.

[1] Students would have already satisfied requirements from Blocks A and B with this curriculum.

[2] Students are recommended to take also MATH1001.

[3] Students who intend to pursue further studies in Mathematics/Physics are recommended to take also MATH2401, MATH3501, PHYS3331, and PHYS3332.

[4] Students may consider taking PHYS2627 as early as possible to allow for maximum flexibility in course selection for advanced level courses.

[5] MATH2002 is for first year BSc students only.

Major in Microbiology
(for students admitted to the first year in 2007 or thereafter)

Microbiology is at the forefront of many exciting developments in modern biology, biochemistry, medicine, environmental science and biotechnology. This Major provides a thorough training in microbiology with a strong emphasis on modern molecular and biochemical approaches. Study involves a range of core subjects but students also have the opportunity to select courses to match their own interests and career goals. Specialization is currently possible in immunology and basic medical microbiology, molecular microbiology, environmental microbiology and also applied aspects such as biotechnology and food microbiology. This Major is designed to appeal to students looking for a thorough training in a scientific discipline recognized as of key importance in the 21st Century. The skills learned during this degree will create graduates that will be highly sought after as professional scientists. Career paths include medical laboratory and diagnostic science, public and environmental health (including civil service), forensic science, food production and quality assurance, biotechnology, government, industrial and academic research. Others may seek to use the relevant skills learned in this major to pursue postgraduate study or professional training in healthcare.

Minimum Entry Requirement : AL Biology or equivalent, or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)
Impermissible Combination : Major in Biology
Minor in Microbiology

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
BIOL0129	Introductory microbiology	3
BIOL0131	Basic medical microbiology	3
BIOL0132	Practical microbiology	3
BIOL1125	Introduction to biochemistry **OR** BIOC1001 Basic biochemistry	6
Plus at least 3 credits of the following courses:		
BIOL0130	Introduction to the biotechnology industry	3
BIOL0602	Origins of life and astrobiology	3
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL0128	Biological techniques, instrumentation and data processing	6
BIOL1106	Genetics	3
2. Advanced level courses (48 credits)		
BIOL2111	Molecular microbiology	6
BIOL2205	Basic immunology	6
BIOL2303	Introduction to molecular biology	6
BIOL2515	Food microbiology	6
BIOL2606	Environmental microbiology	6
BIOL3317	Microbial biotechnology	6
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses: Any from the list below:		
Plus at least 12 credits of the following courses:		
BIOL2217	General parasitology	3
BIOL2302	Fermentation technology	6
BIOL2501	Food processing and preservation	6
BIOL2505/BIOL3527	Food safety and quality management	6
BIOL2620	Extremophiles	3
BIOL3212	Applied immunology	6
BIOL3214	General virology	6
BIOL3307	The biotechnology industry	6
BIOL3323	Molecular microbial ecology	3
BIOL3624	Environmental monitoring and remediation techniques	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- BIOL2318	Biological sciences field course	6
- BIOL2320	Directed studies in biological sciences	6
- BIOL3321	Biological sciences project	12
- BIOL3988	Biological science internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level biological sciences course (BIOL2000 or BIOL3000 level)

Major in Physics (for students admitted to the first year in 2008 or thereafter)

The Major in Physics is intended for students who would like to acquire a well-rounded foundation on the subject. It covers a wide range of basic courses in theoretical and experimental physics to prepare students for future careers which require a professional knowledge in physics, such as the semiconductor industry, education, and research. A large selection of elective courses is provided for students to pursue a wide range of topics from the small scale of nanomaterials to the large scale of astrophysics.

Minimum Entry Requirement : 1. AL / AS Physics or AL Engineering Science; and HKCEE Additional Mathematics or AS Mathematics and Statistics or AL Pure Mathematics; or
2. A pass in PHYS0114 Fundamental physics I and PHYS0115 Fundamental physics II; or equivalent

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Major in Mathematics/Physics
Minor in Physics

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
PHYS1414	General physics I	6
PHYS1415	General physics II	6

Plus at least 6 credits of introductory level Physics courses (PHYS0000 or PHYS1000 level), subject to prerequisite requirements.

2. Advanced level courses (48 credits) [1]

PHYS2627	Introductory quantum physics [2]	6

Plus at least 12 credits of the following courses:

PHYS2321	Introductory electromagnetism	6
PHYS2322	Statistical mechanics and thermodynamics	6
PHYS2323	Introductory quantum mechanics	6
PHYS2626	Introductory classical mechanics	6

Plus at least 30 credits of advanced level Physics courses (PHYS2000 or PHYS3000 or PHYS6000 level), subject to prerequisite requirements.

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- PHYS2533	Directed studies in physics	6
- PHYS3531	Physics project	12
- PHYS3988	Physics internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level physics course (PHYS2000 or PHYS3000 or PHYS6000 level)

Note: [1] Students who intend to pursue further studies in Physics are recommended to take also PHYS3331 and PHYS3332
[2] Students may consider taking PHYS2627 as early as possible to allow for maximum flexibility in course selection for advanced level courses.

Major in Risk Management
(for students admitted to the first year in 2008 or thereafter)

The Major in Risk Management enables students to gain an intellectual understanding of both financial and investment risks. Exposure to various statistical techniques for risk modelling is provided, with specific applications to financial and insurance problems. Career opportunities are available in financial institutions and large corporations including banks and consulting firms.

Minimum Entry Requirement : AL Pure Mathematics or AS Mathematics & Statistics or equivalent, or a pass in MATH0211 Basic applicable mathematics

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Major in Statistics
Minor in Risk Management;
Statistics

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
STAT1301	Probability and statistics I	6
STAT1302	Probability and statistics II	6
Plus at least 6 credits of the following courses:		
STAT1303	Data management	6
STAT1304	Design and analysis of sample surveys	6
STAT1305	Introduction to demography	6
2. Advanced level courses (48 credits)		
STAT2301	Linear statistical analysis	6
STAT2309	The statistics of investment risk	6
STAT2310	Risk management and insurance	6
STAT3301	Time-series analysis	6
Plus at least 24 credits of the following courses:		
STAT2303	Probability modelling	6
STAT2315	Practical mathematics for investment	6
STAT2320	Risk management and Basel II in banking and finance	6
STAT2806	Financial economics	6
STAT3305	Financial data analysis	6
STAT3308	Financial engineering	6
STAT3316	Advanced probability	6
STAT3317	Computational statistics	6
STAT3812	Stochastic calculus with financial applications	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- STAT2318	Directed studies in statistics	6
- STAT3319	Statistics project	12
- STAT3988	Statistics internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level statistics course (STAT2000 or STAT3000 level)

Major in Statistics (for students admitted to the first year in 2008 or thereafter)

The Major in Statistics equips students with powerful mathematical, analytic and computational skills, which are in great demand in many practical areas. It establishes for students a strong background in statistical concepts, and aims to provide a broad and solid training in applied statistical methodologies. Career opportunities are available in business, finance, industry, computing, marketing, communications, environmental protection, health organizations, as well as in scientific and academic research.

Minimum Entry Requirement : AL Pure Mathematics or AS Mathematics & Statistics or equivalent, or a pass in MATH0211 Basic applicable mathematics

Minimum Credit Requirement : 72 credits (18 credits introductory level, 54 credits advanced level courses including experiential learning requirement)

Impermissible Combination : Major in Risk Management
Minor in Risk Management;
Statistics

Required courses (72 credits)

		Credits
1. Introductory level courses (18 credits)		
STAT1301	Probability and statistics I	6
STAT1302	Probability and statistics II	6
Plus at least 6 credits of the following courses:		
STAT1303	Data management	6
STAT1304	Design and analysis of sample surveys	6
STAT1305	Introduction to demography	6
2. Advanced level courses (48 credits)		
STAT2301	Linear statistical analysis	6
STAT3301	Time-series analysis	6
STAT3302	Multivariate data analysis	6
STAT3304	Computer-aided statistical modelling	6
Plus at least 24 credits from Lists A and B, among which at least 12 credits from List A:		
List A:		
STAT2302	Statistical inference	6
STAT2303	Probability modelling	6
STAT2308	Statistical genetics	6
STAT2312	Data mining	6
STAT2313	Marketing engineering	6
STAT3305	Financial data analysis	6
STAT3306	Selected topics in statistics	6
STAT3308	Financial engineering	6
STAT3316	Advanced probability	6
STAT3317	Computational statistics	6
STAT3319	Statistics project	12#
STAT3811	Survival analysis	6
STAT3812	Stochastic calculus with financial applications	6
List B:		
STAT2304	Design and analysis of experiments	6
STAT2305	Quality control and Management	6
STAT2306	Business logistics	6
STAT2307	Statistics in clinical medicine & bio-medical research	6
STAT2309	The statistics of investment risk	6
STAT2310	Risk management and insurance	6
STAT2315	Practical mathematics for investment	6
STAT2320	Risk management and Basel II in banking and finance	6
STAT2801	Life contingencies	6
STAT2805	Credibility theory and loss distributions	6
STAT2806	Financial economics	6
STAT3810	Risk theory	6

3. Experiential learning requirement (6 credits) *

Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:

- STAT2318	Directed studies in statistics	6
- STAT3319	Statistics project	12[#]
- STAT3988	Statistics internship	6
- SCNC2005	Career development for science students	(non-credit bearing)
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)		(non-credit bearing)
- Any other activities determined by the Faculty to conform to the spirit of experiential learning experience		(non-credit bearing)

* If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level statistics course (STAT2000 or STAT3000 level)

[#] 6 credits counted towards experiential learning requirement.

Minor in Actuarial Studies
(for students admitted to the first year in 2007 or thereafter)

Mathematics, Physics, Statistics, Economics, Finance, and other Science majors who are taking a lot of mathematics and had very strong Advanced Level Pure Mathematics grades are suitable for choosing this Minor.

Minimum Entry Requirement : AL Pure Mathematics or AS Mathematics and Statistics or equivalent
Minimum Credit Requirement : 36-42 credits (12-18 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Nil

Required courses (36 or 42 credits)

		Credits
1.	**Introductory level courses (12 or 18 credits)**	
For students majoring in Risk Management or Statistics (12 credits)		
STAT1305	Introduction to demography	6
STAT1802	Financial mathematics	6
STAT2303	Probability modelling	6
STAT2306	Business logistics	6
For students minoring in Risk Management or Statistics (12 credits)		
STAT1302	Probability and statistics II	6
STAT1801	Probability and statistics: foundations of actuarial science	6
STAT1802	Financial mathematics	6
STAT2303	Probability modelling	6
For students not belonging to the above two categories (18 credits)		
STAT1301	Probability and statistics I	6
STAT1302	Probability and statistics II	6
STAT1801	Probability and statistics: foundations of actuarial science	6
STAT1802	Financial mathematics	6
STAT2303	Probability modelling	6
2.	**Advanced level courses (24 credits)**	
At least 24 credits from the following courses:		
STAT2801	Life contingencies	6
STAT2805	Credibility theory and loss distributions	6
STAT2806	Financial economics	6
STAT2807	Corporate finance for actuarial science	6
STAT3810	Risk theory	6
STAT3811	Survival analysis	6
STAT3812	Stochastic calculus with financial applications	6

Minor in Astronomy (for students admitted to the first year in 2008 or thereafter)

Have you ever enjoyed a beautiful starry night and wondered it came to be like that? The Minor in Astronomy is intended for students who would like to acquire some appreciation of the beauties of the universe. Students are offered the opportunity to receive training in both the theoretical and practical aspect of astronomy.

Minimum Entry Requirement : Nil [1]
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Astronomy [2]

** Refer to the Physics Department website http://www.physics.hku.hk for suggested curriculum.*

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
PHYS0001	Nature of the universe I: introduction to observational astronomy and the solar system	3
PHYS0002	Nature of the universe II: stars, galaxies and cosmology for beginners	3

Plus at least 6 credits of introductory level Physics course (PHYS0000 or PHYS1000 level) [3]

2. Advanced level courses (24 credits)

At least 24 credits of advanced level Physics courses (PHYS2000 or PHYS3000 or PHYS6000) level, out of which at least 12 credits are of the following courses:

PHYS2021	The physical universe	6
PHYS2022	Observational astronomy	6
PHYS3031	Astrophysics	6
PHYS3033	General relativity	6
PHYS3034	Cosmology	6
PHYS3040	Stellar physics	6

Note:
[1] Students without AL/AS Physics are strongly advised to take PHYS1417 to allow for maximum flexibility in selection of advanced level Physics courses. Students without HKCEE Physics are strongly advised to take PHYS0114 and PHYS0115 and PHYS1417 to allow for maximum flexibility in selection of advanced level Physics courses.
[2] For students having major/minor combination of Physics / Astronomy, or Materials Science / Astronomy, any single introductory or advanced level Physics course can be used to satisfy a major or minor requirement only once.
[3] Students are advised to take at least one of the following courses: PHYS1417, PHYS1414, or PHYS1415 to allow for maximum flexibility in selection for advanced level Physics courses.

Minor in Biochemistry
(for students admitted to the first year in 2007 or thereafter)

Biochemistry, strengthened with molecular biology, is a field with enormous applications to our daily lives. It also is a discipline of sublime fascination. Our understanding of the biochemical bases of various life processes has greatly improved human welfare, particularly the medical and nutritional aspects. Further advances in this rapidly expanding field of knowledge, including building and establishing new conceptual frameworks, development of novel methodologies and techniques, should pave way to even more spectacular insights into nature and lead to a better control of our destiny.

The Minor in Biochemistry offered by the Department of Biochemistry is designed to provide students with both basic and advanced knowledge in modern biochemistry and molecular biology. Our goal is to develop and equip students with enough critical thinking and analytical skills so that they can embark on a career in biochemical sciences.

Minimum Entry Requirement : AL Biology or AS Chemistry or a pass in CHEM0004 Fundamental chemistry or equivalent
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Biochemistry

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
BIOC1001	Basic biochemistry	6
BIOC1003	Introduction to molecular genetics	6
2. Advanced level courses (24 credits)		
BIOL2301	Protein structure and function	6

Plus at least 6 credits of BIOC2000 level courses and at least 12 credits of BIOC3000 level courses, subject to prerequisite requirements.

Minor in Biology (for students admitted to the first year in 2008 or thereafter)

The discipline of biology applies to every aspect of our existence on Earth, so an understanding of biological principles helps to enrich our appreciation of life. Biology is also a complementary subject to many other disciplines including the physical sciences and humanities.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Biology;
Biotechnology
Minor in Ecology & Biodiversity

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
BIOL1122	Functional biology	6

Plus at least 6 credits of the following courses:

BIOL0129	Introductory microbiology	3
BIOL0602	Origins of life and astrobiology	3
BIOL0603	Ecology and evolution	3
BIOL0604	Evolutionary diversity	6
BIOL1106	Genetics	3

(Students are strongly recommended to take "BIOL1125 Introduction to biochemistry" as an elective)

2. Advanced level courses (24 credits)		
BIOL2303	Introduction to molecular biology	6

Plus at least 18 credits of advanced level courses (BIOL2000 and BIOL3000 level) of which 6 credits at BIOL3000 level, subject to prerequisite requirements.

Minor in Biotechnology
(for students admitted to the first year in 2008 or thereafter)

Technology leads our future. Biotechnology is relevant to many business sectors and our daily life. Students who are interested in the developments of biological sciences are highly recommended to take this Minor. You will learn the scientific principles underlying current biotechnological advances and will become literate in biotechnology business and advancements.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Biology;
Biotechnology

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
At least 12 credits of the following courses:		
BIOL1125	Introduction to biochemistry	6
BIOL0129	Introductory microbiology	3
BIOL1106	Genetics	3
BIOL1122	Functional biology	6
Alternative course possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL0128	Biological techniques, instrumentation and data processing	6
2. Advanced level courses (24 credits)		
BIOL2303	Introduction to molecular biology	6
Plus at least 6 credits of the following courses:		
BIOL3315	Animal biotechnology	6
BIOL3316	Plant biotechnology	6
BIOL3317	Microbial biotechnology	6
Plus at least 12 credits of the following courses:		
BIOL2111	Molecular microbiology	6
BIOL2112	Plant physiology	6
BIOL2116	Genetics I	6
BIOL2203	Reproduction & reproductive biotechnology	6
BIOL2205	Basic immunology	6
BIOL2207	Endocrinology	6
BIOL2209	Developmental biology	6
BIOL2215	Animal physiology	6
BIOL2217	General parasitology	3
BIOL2302	Fermentation technology	6
BIOL2515	Food microbiology	6
BIOL3212	Applied immunology	6
BIOL3214	General virology	6
BIOL3307	Biotechnology industry	6
BIOL3522	Nutrigenomics	3

Minor in Chemistry (for students admitted to the first year in 2007 or thereafter)

Why study Chemistry? Chemistry is both interesting and important. It is involved in almost everything you do. Chemistry occupies a central role in the natural sciences, it overlaps with other fields, and provides a fruitful source for important discoveries. For example, new discoveries in material sciences such as nanoscale materials cannot be realized without chemists. Astronomers now use results from chemical laboratories to search for new compounds in distant galaxies. Geologists analyse the structures of minerals and transformations between different forms of matter in the Earth's crust by using chemical principles of bonding and thermodynamics. Biologists try to understand the life process by chemical language in the field like molecular biology and chemical genetics. Therefore, the Chemistry Department offers this Minor for those students who need a knowledge of chemistry for their major subjects or those who have an interest in studying chemistry at a higher level. Students are required to take introductory courses in general and analytical chemistry and one other chemistry course from selected areas. The advanced courses emphasize instrumental analysis and spectroscopic techniques. In addition, students may also choose specialized courses in different areas of chemistry such as organic**,** synthetic, materials, medicinal, environmental, or industrial chemistry as their electives in the second and third years. The Minor is essential to students who major in science-related subjects such as the biological, medical, materials and environmental sciences.

Minimum Entry Requirement : AL Chemistry or a pass in CHEM0004 Fundamental chemistry or equivalent
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Chemistry

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
12 credits of the following courses:		
CHEM1002	Chemistry: principles and concepts [1]	6
CHEM1003	Chemistry: the molecular world	6
CHEM1007	Basic chemistry for biological sciences [1]	6
CHEM1406	Basic organic chemistry **OR** CHEM1401 Fundamentals of organic chemistry	6
2. Advanced level courses (24 credits)		
Any	24 credits of advanced level Chemistry courses (CHEM2000 or CHEM3000 level), subject to prerequisite requirements.	

Note: [1] CHEM1002 and CHEM1007 are mutually exclusive.

Minor in Earth Sciences
(for students admitted to the first year in 2008 or thereafter)

To provide interested students an introduction to the different aspects of the discipline which may or may not be relevant to their major field of interest. Courses in physical geology and Earth history are offered in the first year followed by more advanced courses in the second and third year. A wide range of Earth Science courses are offered. A Minor in Earth Sciences is particularly suitable for students majoring in biochemistry, botany, chemistry, computing, ecology, economics, geography, mathematics, statistics, physics and zoology.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Earth Sciences

Required courses (36 credits)

		Credits
1.	**Introductory level courses (12 credits)**	
Any	two of the following three courses:	
EASC0105	Earth through time	6
EASC0118	Blue planet	6
EASC0116	Introduction to physical geology	6
2.	**Advanced level courses (24 credits)**	
Any	24 credits of advanced level Earth Sciences courses (EASC2000 or EASC3000 level), subject to prerequisite requirements.	

Minor in Ecology & Biodiversity
(for students admitted to the first year in 2008 or thereafter)

Southeast Asia is extremely diverse in plants and animals, and Hong Kong has, for its size, a remarkable biodiversity. This Minor is an ideal introduction to the natural world, the species and ecosystems it comprises and the biological rules it follows. Students will first learn about general ecological principles and the local flora and fauna of the region. They will then be able to build upon this basic knowledge by selecting from among a wide range of courses that offer learning opportunities through practical and field work, traditional and virtual teaching, in more specialized areas of ecology and biodiversity.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Biology;
Ecology & Biodiversity;
Minor in Biology

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
BIOL0601	Ecology of Hong Kong	3
BIOL0603	Ecology and evolution	3
BIOL0604	Evolutionary diversity	6
The following is also recommended:		
BIOL0605	Ecology field course	3
2. Advanced level courses (24 credits)		
Plus at least 24 credits of the following courses:		
BIOL2606	Environmental microbiology	6
BIOL2607	Fish biology	6
BIOL2608	Biometrics	6
BIOL2610	Biological oceanography	6
BIOL2611	Systematics & phylogenetics	6
BIOL2612	Conservation biology	6
BIOL2615	Freshwater ecology	6
BIOL2616	Plant structure and evolution	3
BIOL2617	Coastal ecology	6
BIOL2618	How humans evolved	6
BIOL2619	Terrestrial ecology	6

Minor in Environmental Protection
(for students admitted to the first year in 2008 or thereafter)

Managing and conserving the environment is increasingly recognized as an important and necessary challenge for modern Society. Preserving biological diversity, whether species, genes, populations or ecosystems, requires an understanding of a range of exciting new areas in the life sciences. This Minor will provide students with an appreciation of the depth and breadth of this important developing field. The lectures are enhanced by valuable laboratory and practical experience that should be applicable to a wide range of careers, and contribute to a better understanding of the world we live in.

Minimum Entry Requirement : AL or AS Chem or equivalent or a pass in CHEM0004 Fundamental chemistry
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Environmental Protection

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
CHEM1007	Basic chemistry for biological sciences	6
Plus at least 6 credits of the following courses:		
BIOL0601	Ecology of Hong Kong	3
BIOL0603	Ecology and evolution	3
EASC0118	Blue planet	6
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL0605	Ecology field course	3
CHEM1003	Chemistry: the molecular world	6
EASC0120	Earth, environmental and society	6
2. Advanced level courses (24 credits)		
CHEM2103	Chemical process industries and analysis	6
Plus at least 18 credits of the following courses:		
BIOL2610	Biological oceanography	6
BIOL2612	Conservation biology	6
BIOL2614	Environmental toxicology	6
BIOL2615	Freshwater ecology	6
BIOL2617	Coastal ecology	6
BIOL3621	Fisheries and mariculture	6
BIOL3622	Environmental impact assessment	6
BIOL3624	Environmental monitoring and remediation techniques	6
CHEM2102	Environmental chemistry	6
CHEM2202	Chemical instrumentation	6
CHEM2207	Food and water analysis	6
EASC2126	Mineralogy and geochemistry	6
EASC2128	Earth-ocean-atmosphere interactions resources	6
EASC3132	Earth resources	6

Minor in Food & Nutritional Science
(for students admitted to the first year in 2007 or thereafter)

This Minor is ideal for those who simply want to learn more about diet as part of their quest to promote personal health or for those who see knowledge in food and nutrition as complementary to their major study, be it biotechnology, chemistry, business or social science.

Minimum Entry Requirement : AL Biology or equivalent or a pass in BIOL0126 Fundamentals of biology and AL / AS Chemistry or equivalent or a pass in CHEM0004 Fundamental chemistry
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Food & Nutritional Science

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
BIOL0002	Introduction to food and nutritional science	3
BIOL1123	Food chemistry	3
BIOL1514	Nutrition and metabolism	6
2. Advanced level courses (24 credits)		
At least 24 credits of the following courses:		
BIOL2215	Animal physiology	6
BIOL2302	Fermentation technology	6
BIOL2501	Food processing and preservation	6
BIOL2503	Grain production & utilization	6
BIOL2505/BIOL3527	Food safety and quality management	6
BIOL2507	Meat and dairy science	6
BIOL2515	Food microbiology	6
BIOL2517	Food analysis	3
BIOL2519	Essential nutrients & functional foods	6
BIOL2520	Food toxicology	3
BIOL2521	Food engineering	3
BIOL3516	Nutrition and brain function	3
BIOL3522	Nutrigenomics	3
BIOL3523	Principles of Chinese medicated diet	3
BIOL3524	Diet and disease	3
BIOL3525	Food product development	3

Minor in General Science
(for students admitted to the first year in 2007 or thereafter)

Science is an indispensable component of this modern world, with a significant impact to our daily lives. Be it the interaction between animals and their natural environment, the food in our daily diet, the synthesis of new materials (nanomaterials, polymeric and semiconducting materials), the mystery of the human gene, or the application of mathematics to solve problems. This Minor is suitable for non-Science students who are interested in exploring science and learning how scientists study the real world. The scientific knowledge, quantitative reasoning, logical and analytical thinking and sense of numeracy will be useful in various fields of finance, business, social sciences, arts and education. Students have the flexibility to gather courses in any area of interest.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Nil (This Minor is only offered to non-Faculty of Science students.)

Required courses (36 credits)

1. Introductory level courses (12 credits)

At least 12 credits of any introductory level Science courses (level 0 & 1), subject to prerequisite requirements.

2. Advanced level courses (24 credits)

At least 24 credits of any advanced level Science courses (level 2 & 3), subject to prerequisite requirements.

Minor in Global Climate Change
(for students admitted to the first year in 2007 or thereafter)

Global Climate Change is one of the most pressing issues affecting all mankind in today's world. Is this a new phenomenon or can we learn from past changes? How far and fast is climate likely to change and how will Earth's inhabitants be affected? Students are offered the opportunity to receive a scientific foundation upon which they can develop an understanding of how our Planet's climate system evolves.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Nil [1]

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
EASC0121	Earth's climate past and future	3
Plus at least 9 credits from the following courses:		
BIOL0603	Ecology and evolution	3
BIOL0605	Ecology field course	3
EASC0105	Earth through time	6
EASC0118	Blue planet	6
EASC0120	Earth, environment and society	6
PHYS0610	Weather today	3
2. Advanced level courses (24 credits)		
At least 24 credits of advanced level Earth Sciences courses (EASC2000 or EASC3000) including:		
EASC2127	Global change: anthropogenic impact	6
EASC2131	A cool world: ice ages and climate change	6
Plus at least 12 credits from the following courses:		
BIOL2610	Biological oceanography	6
BIOL2612	Conservation biology	6
CHEM2102	Environmental chemistry	6
EASC2112	Earth systems	6
EASC2128	Earth-ocean-atmosphere interactions	6
EASC2129	Physical oceanography	6
EASC2130	Earth observation and remote sensing	6
PHYS2624	Introductory atmospheric physics	6

Note: [1] For students having major / minor combination of Earth Sciences / Global Climate Change, any single introductory or advanced level Earth Sciences course can be used to satisfy a major or minor requirement only once.

Minor in Mathematics (for students admitted to the first year in 2007 or thereafter)

Mathematics has been referred to as "our invisible culture". Most people agree mathematics finds applications ranging from traditional ones in the physical sciences and engineering to more recent ones in the life sciences, economics, finance and management. Yet, many are dazzled by achievements mathematics helps to bring about that they forget about mathematics itself! A Minor in Mathematics provides an initiation into the subject and will nurture quantitative reasoning, logical and analytical thinking, meticulous care to work, ability to conceptualize, problem-solving skill and innovative imagination.

Minimum Entry Requirement[#] : 1. HKCEE Additional Mathematics and AS Mathematics and Statistics; or
2. AL Pure Mathematics; or
3. a pass in MATH0201 Basic calculus (for those with HKCEE Math only) or a pass in MATH1804 University mathematics A (for those with AS Math & Stat only)

Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)

Impermissible Combination : Major in Mathematics
Major in Mathematics/Physics

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits) [1]		
MATH1111	Linear algebra	6
Plus one of the following courses:		
MATH1211	Multivariable calculus	6
MATH1805	University mathematics B	6
MATH1813	Mathematical methods for actuarial science	6
2. Advanced level courses (24 credits)		
Any 24 credits of advanced level Mathematics courses (MATH2XXX or MATH3XXX level), subject to prerequisite requirements.		

Note: [#] Students with different mathematics background must consult the Department of Mathematics for advice on the bridging courses.

[1] Students are strongly advised to take also MATH1001.

Minor in Microbiology
(for students admitted to the first year in 2007 or thereafter)

Microbiology is at the forefront of many exciting developments in modern biology, biochemistry, medicine, environmental science and biotechnology. It is recognized as a key science of the 21st Century. This Minor provides training in microbiology with a strong emphasis on modern molecular and biochemical approaches. It is particularly suited as a complementary subject to those taking Majors in Food and Nutritional Science, Biotechnology, Biochemistry or Environmental Protection.

Minimum Entry Requirement : AL Biology or equivalent, or a pass in BIOL0126 Fundamentals of biology
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Microbiology

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
12 credits of the following courses:		
BIOL0129	Introductory microbiology	3
BIOL0132	Practical microbiology	3
BIOL1125	Introduction to biochemistry **OR** BIOC1001 Basic biochemistry	6
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL0130	Introduction to the biotechnology industry	3
BIOL0131	Basic medical microbiology	3
BIOL0602	Origins of life and astrobiology	3
2. Advanced level courses (24 credits)		
BIOL2111	Molecular microbiology	6
BIOL2205	Basic immunology	6
Alternative courses possible in the case of students taking Majors/Minors with an overlap of core courses:		
BIOL2515	Food microbiology	6
BIOL2606	Environmental microbiology	6
BIOL3212	Applied immunology	6
Plus at least 12 credits of the following:		
BIOL2217	General parasitology	3
BIOL2302	Fermentation technology	6
BIOL2303	Introduction to molecular biology	6
BIOL2501	Food processing and preservation	6
BIOL2505/BIOL3527	Food safety and quality management	6
BIOL2515	Food microbiology	6
BIOL2606	Environmental microbiology	6
BIOL2620	Extremophiles	3
BIOL3212	Applied immunology	6
BIOL3214	General virology	6
BIOL3307	The biotechnology industry	6
BIOL3317	Microbial biotechnology	6
BIOL3323	Molecular microbial ecology	3
BIOL3624	Environmental monitoring and remediation techniques	6

Minor in Physics (for students admitted to the first year in 2008 or thereafter)

The Minor in Physics is intended for students who would like to acquire a taste of the subject. The curriculum is designed with the flexibility for students with and without HKAL Physics/Pure Mathematics background. A large selection of elective courses is provided for students to pursue a wide range of topics from the small scale of nanomaterials to the large scale of astrophysics.

Minimum Entry Requirement : AL / AS Physics or AL Engineering Science; or a pass in PHYS0114 Fundamental physics I and PHYS0115 Fundamental physics II
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Mathematics/Physics
Physics

** Refer to the Physics Department website http://www.physics.hku.hk for suggested curriculum.*

Required courses (36 credits)

		Credits
1.	**Introductory level courses (12 credits)**	
PHYS1417	Basic Physics	6
Plus	at least 6 credits of introductory level Physics course (PHYS0000 or PHYS1000 level) [1]	
Or		
PHYS1414	General physics I	6
PHYS1415	General physics II	6
2.	**Advanced level courses (24 credits)**	
Any	24 credits of advanced level Physics courses (PHYS2000 or PHYS3000 or PHYS6000 level), subject to prerequisite requirements.	

Note: [1] Students are strongly advised to take at least one of the following courses: PHYS1414 or PHYS1415 to allow for maximum flexibility in course selection for advanced level Physics courses.

Minor in Risk Management
(for students admitted to the first year in 2007 or thereafter)

The Minor in Risk Management enables students to gain exposure to financial and investment risks, and to various statistical techniques for modeling them. Specific attention is given to applications in financial and insurance problems.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Risk Management;
Statistics
Minor in Statistics

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
STAT1301	Probability and statistics I	6
Or		
STAT1306	Introductory statistics	6
Or		
STAT0302	Business statistics	6
Plus		
STAT1302	Probability and statistics II	6
Or		
STAT1303	Data management	6
Or		
One of the advanced level courses listed below		6
2. Advanced level courses (24 credits)		
At least 24 credits of the following courses:		
STAT2309	The statistics of investment risk	6
STAT2310	Risk management and insurance	6
STAT2311	Computer-aided data analysis	6
STAT2312	Data mining	6
STAT2314	Business forecasting	6
STAT2315	Practical mathematics for investment	6
STAT2320	Risk management and Basel II in banking and finance	6
STAT2806	Financial economics	6
STAT3301	Time-series analysis	6
STAT3305	Financial data analysis	6
STAT3308	Financial engineering	6
STAT3812	Stochastic calculus with financial applications	6

Minor in Statistics (for students admitted to the first year in 2007 or thereafter)

The Minor in Statistics introduces to students important statistical concepts and provides them with exposure to applied statistical methodologies. A broad spectrum of courses is available for selection, covering topics which find applications in areas like business, finance, risk management, survey research, insurance, industry, medicine or computing.

Minimum Entry Requirement : Nil
Minimum Credit Requirement : 36 credits (12 credits introductory level & 24 credits advanced level courses)
Impermissible Combination : Major in Risk Management;
Statistics
Minor in Risk Management

Required courses (36 credits)

		Credits
1. Introductory level courses (12 credits)		
One of the following courses:		
STAT0301	Elementary statistical methods	6
STAT0302	Business statistics	6
STAT1301	Probability and statistics I	6
STAT1306	Introductory statistics	6
Plus at least 6 credits of the following courses:		
STAT1302	Probability and statistics II	6
STAT1303	Data management	6
STAT1304	Design and analysis of sample surveys	6
2. Advanced level courses (24 credits)		
At least 24 credits of the following courses:		
STAT2301	Linear statistical analysis	6
STAT2302	Statistical inference	6
STAT2303	Probability modelling	6
STAT2304	Design and analysis of experiments	6
STAT2305	Quality control and management	6
STAT2306	Business logistics	6
STAT2307	Statistics in clinical medicine & bio-medical research	6
STAT2308	Statistical genetics	6
STAT2309	The statistics of investment risk	6
STAT2310	Risk management and insurance	6
STAT2311	Computer-aided data analysis	6
STAT2312	Data mining	6
STAT2313	Marketing engineering	6
STAT2314	Business forecasting	6
STAT2315	Practical mathematics for investment	6
STAT2320	Risk management and Basel II in banking and finance	6
STAT2806	Financial economics	6
STAT3301	Time-series analysis	6
STAT3302	Multivariate data analysis	6
STAT3304	Computer-aided statistical modelling	6
STAT3305	Financial data analysis	6
STAT3306	Selected topics in statistics	6
STAT3308	Financial engineering	6
STAT3316	Advanced probability	6
STAT3317	Computational statistics	6
STAT3811	Survival analysis	6
STAT3812	Stochastic calculus with financial applications	6

Note: The following combinations of courses are recommended for students interested in more focused areas:

[1] Statistical theory and research methodology: STAT1301, STAT1302, STAT2301, STAT2302, STAT2303, STAT3316, STAT3301, STAT3302.

[2] Finance and investment: STAT1303, STAT2301, STAT2309, STAT2310, STAT2311, STAT2314, STAT2315, STAT2320, STAT2806, STAT3301, STAT3305, STAT3308, STAT3812.

[3] Business and management: STAT1303, STAT1304, STAT2301, STAT2305, STAT2306, STAT2311, STAT2312, STAT2313, STAT2314, STAT3302.

[4] Biological sciences: STAT1303, STAT2301, STAT2303, STAT2304, STAT2307, STAT2308, STAT2311, STAT3811.

[5] Information technology: STAT1303, STAT2311, STAT2312, STAT3317, STAT3304, STAT3305.

Candidates admitted to this programme could refer to p.1461 to p.1822 for courses offered by other Faculties and Centres.