

## **REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE <sup>1</sup> (BSc)**

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

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### **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 or any core course offered in any study programme in the Faculty of Science.

“Advanced course” means any level 2 and 3 course offered by the Faculty of Science or the Department of Biochemistry or any core course offered in years 2 and 3 of a study programme in the Faculty of Science.

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### **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.

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### **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.

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### **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.

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<sup>1</sup> These Regulations apply to students admitted to the first year of study for the Degree of BSc in the academic year 2001-2002 and 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.

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### **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.

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

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**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.

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

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### **Unsatisfactory Progress**

**Sc10** Candidates in any academic year who have passed less than 36 credits of courses may be required to discontinue their studies in accordance with General Regulation G12.

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### **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.

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### **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.
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**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.

## **REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE <sup>2</sup> (BSc)**

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

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### **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.

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### **Admission to the 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.

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### **Length of Study**

**Sc3** The curriculum for the degree of Bachelor of Science shall 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.

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### **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 less than 180 credits of 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.

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<sup>2</sup> These Regulations apply to students admitted to the first year of study for the Degree of BSc in the academic year 1998-1999, 1999-2000 and 2000-2001.

## **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.

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## **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.

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

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**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.

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

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## **Unsatisfactory Progress**

**Sc10** Candidates in any academic year who have passed less than 30 credits of courses may be required to discontinue their studies in accordance with General Regulation G12.

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## **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.

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## **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 150 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.
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**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)

### A. FIRST YEAR BSc PROGRAMME STRUCTURE

Programme	Course code	Course title	Credits
<b>Biochemistry I</b>  [ For students who wish to follow the <i>Biochemistry programme</i> after completion of the Introductory Level (Year I) ]	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (36 or 39 credits) *</b>		
	BIOC0002	Introduction of Human Biochemistry *	6
	BIOC1001	Basic Biochemistry	6
	BIOC1003	Introduction to Molecular Genetics	6
	CHEM1401	Fundamentals of Organic Chemistry	6
	<i>2 of the following courses:</i>		
	CHEM1301	Basic Inorganic Chemistry	6
	CHEM1501	Applied Spectroscopy & Structure	6
	CHEM1502	Basic Physical Chemistry	9
	<b>Elective courses (12 or 9 credits) *</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			
<b>Biochemistry II #</b>  [ For students who wish to follow the <i>Chemistry / Biochemistry programme</i> after completion of the Introductory Level (Year I) ]	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (33 credits)</b>		
	BIOC1001	Basic Biochemistry	6
	CHEM1301	Basic Inorganic Chemistry	6
	CHEM1406	Basic Organic Chemistry	6
	CHEM1501	Applied Spectroscopy and Structure	6
	CHEM1502	Basic Physical Chemistry	9
	<b>Elective courses (15 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
	YITC1002	Information Technology Proficiency Test	0
	<b>Total credits: 60</b>		

Programme	Course code	Course title	Credits
<p><b>Biochemistry III</b></p> <p>[ For students who wish to follow the <i>Biology and Biochemistry theme in the Biology programme</i> after completion of the Introductory Level (Year I) ]</p>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (30 credits)</b>		
	BIOC1001	Basic Biochemistry	6
	BIOL1102	Functional Biology	9
	BIOL1104	Biological Techniques, Instrumentation and Data Processing	6
	BIOL1106	Genetics	3
	CHEM1001	Chemical Principles for Earth and Life Sciences	6
	<b>Elective courses (18 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
	YITC1002	Information Technology Proficiency Test	0
<b>Total credits: 60</b>			

Notes:

- \* BIOC0002 Introduction of Human Biochemistry (6 credits) will not be offered in 2003-2004. Students should replace this course by choosing 6 credits from elective courses approved by the Faculty of Science.
- # Biochemistry II programme can also follow Chemistry Programme in Advanced Level.
- Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, "candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course."



Programme	Course code	Course title	Credits
<b>Biology</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (42 credits)</b>		
	BIOL0001	Ecology of Hong Kong	3
	BIOL1101	Animal and Plant Diversity	9
	BIOL1102	Functional Biology	9
	BIOL1103	Environmental Biology	9
	BIOL1106	Genetics	3
	BIOL1107	Introduction to Developmental Biology & Reproduction	3
	BIOL1119	Introductory Microbiology	6
	<b>Elective courses (6 credits) #</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
	YITC1002	Information Technology Proficiency Test	0
<b>Total credits: 60</b>			

Notes:

- # Students who wish to follow Biology and Biochemistry theme in the Biology Programme after completion of the First-year (Introductory Level) must take BIOC1001 Basic Biochemistry (6 credits).
- Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Environmental Life Science</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (33 or 36 credits)</b>		
	BIOL0001	Ecology of Hong Kong	3
	BIOL1101	Animal and Plant Diversity	9
	BIOL1103	Environmental Biology	9
	BIOL1119	Introductory Microbiology	6
	<i>1 of the following courses:</i>		
	BIOL1102	Functional Biology	9
	CHEM1001	Chemical Principles for Earth and Life Sciences	6
	EASC1000	Earth's Dynamic Systems	6
	STAT1006	Statistics for Biology	6
	<b>Elective courses (15 or 12 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
ECEN1801	Academic English for Science Students	3	
SCNC1001	Science: Concepts & Notions	6	
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, "candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course."

Programme	Course code	Course title	Credits
<b>Earth Sciences</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (42 credits)</b>		
	EASC0101	Maps, Mapping and Field Geology	6
	EASC0105	Earth through Time	6
	EASC1102	Mineralogy	6
	EASC1103	Geochemistry	6
	EASC1104	Physics of the Earth	6
	EASC1106	Introduction to Petrology	6
	EASC1107	Fluid / Solid Interactions in the Earth	6
	<b>Elective courses (6 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Animal and Plant Biotechnology</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (42 credits)</b>		
	BIOC1001	Basic Biochemistry	6
	BIOL1102	Functional Biology	9
	BIOL1104	Biological Techniques, Instrumentation and Data Processing	6
	BIOL1106	Genetics	3
	BIOL1107	Introduction to Developmental Biology & Reproduction	3
	BIOL1119	Introductory Microbiology	6
	<i>1 of the following courses:</i>		
	BIOL1101	Animal and Plant Diversity	9
	BIOL1103	Environmental Biology	9
	<b>Elective courses (6 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
SCNC1001	Science: Concepts & Notions	6	
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Food and Nutritional Science</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (36 credits)</b>		
	BIOL0002	Introduction to Food Science	3
	BIOL1102	Functional Biology	9
	BIOL1104	Biological Techniques, Instrumentation and Data Processing	6
	BIOL1105	Food Chemistry	6
	BIOL1119	Introductory Microbiology	6
	CHEM1401	Fundamentals of Organic Chemistry	6
	<b>Elective courses (12 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
	YITC1002	Information Technology Proficiency Test	0
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Mathematics</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (42 credits)</b>		
	CSIS0911	Computer Concepts and Programming	6
	MATH1101	Linear Algebra I	6
	MATH1102	Linear Algebra II	6
	MATH1201	Calculus I	6
	MATH1202	Calculus II	6
	MATH1800	Elements of Discrete Mathematics	6
	STAT1007	Applied Mathematics S	6
	<b>Elective courses (6 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Physics</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (42 credits)</b>		
	MATH1811	Mathematics I	6
	MATH1812	Mathematics II	6
	PHYS1111	Introduction to Mechanics	6
	PHYS1112	Electricity and Magnetism	6
	PHYS1113	Heat, Light and Waves	6
	PHYS1314	Modern Physics	6
	PHYS1411	Introductory Experimental Physics	6
	<b>Elective courses (6 credits) *</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Notes:

- \* Students intend to take the Computational Physics and Software Engineering theme in their second year are strongly advised to take CSIS0911 Computer Concepts and Programming. Students intend to take the Physics with Business Administration theme in their second year are strongly advised to take BUSI1002 Introduction to Accounting.
- Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

Programme	Course code	Course title	Credits
<b>Mathematics / Physics</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (36 credits)</b>		
	MATH1101	Linear Algebra I	6
	MATH1201	Calculus I	6
	MATH1202	Calculus II	6
	PHYS1111	Introduction to Mechanics	6
	PHYS1112	Electricity and Magnetism	6
	PHYS1314	Modern Physics	6
	<b>Elective courses (12 credits) *</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI1001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Notes:

- \* Students are strongly advised to take MATH1102 Linear Algebra II and/or PHYS1113 Heat, Light and Waves in their first year, in order to facilitate the selection of mathematics and physics courses in subsequent years.
- Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”



Programme	Course code	Course title	Credits
<b>Chemistry</b> *	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (36 credits)</b>		
	CHEM1201	Introductory Analytical Chemistry	3
	CHEM1301	Basic Inorganic Chemistry	6
	CHEM1406	Basic Organic Chemistry	6
	CHEM1501	Applied Spectroscopy & Structure	6
	CHEM1502	Basic Physical Chemistry	9
	<i>1 of the following courses:</i>		
	MATH0801	Basic Mathematics I	6
	MATH0802	Basic Mathematics II	6
	MATH1803	Basic Mathematics III	6
	MATH1811	Mathematics I #	6
	<b>Elective courses (12 credits) +</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
SCNC1001	Science: Concepts & Notions	6	
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Notes:

- \* Students who wish to follow Chemistry / Biochemistry programme after completion of the Introductory Level are advised to follow the structure of the Biochemistry II programme.
- # Students are expected to take MATH1812 Mathematics II as a follow-up course.
- + Students who wish to specialize in Medicinal Chemistry Theme in subsequent years are required to take BIOC1001 Basic Biochemistry as an elective.
- Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, "candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course."

Programme	Course code	Course title	Credits
<b>Chemistry with Management</b>	<b>1. Subject specialization (48 credits)</b>		
	<b>Core courses (36 credits)</b>		
	CHEM1201	Introductory Analytical Chemistry	3
	CHEM1301	Basic Inorganic Chemistry	6
	CHEM1406	Basic Organic Chemistry	6
	CHEM1501	Applied Spectroscopy and Structure	6
	CHEM1502	Basic Physical Chemistry	9
	<i>1 of the following courses:</i>		
	BUSI1002	Introduction to Accounting	6
	BUSI1004	Marketing	6
	<b>Elective courses (12 credits)</b>		
	Any course (level 0 or 1) approved by the Faculty of Science offered in the BSc programme		
	<b>2. General Education / Broadening (12 credits)</b>		
	CSCI0001	Practical Chinese Language Course for Science Students	3
	ECEN1801	Academic English for Science Students	3
	SCNC1001	Science: Concepts & Notions	6
YITC1002	Information Technology Proficiency Test	0	
<b>Total credits: 60</b>			

Note:

Students should note that BSc Regulation Sc7 is related to courses with laboratory or fieldwork components which reads, “candidates failing to fulfil the laboratory or fieldwork component of a course, if any, may result in failure of the whole course.”

## B. BSc COURSES

### Biochemistry

#### **BIOC0002 Introduction of Human Biochemistry** \* (6 credits)

Knowledge of the human body has advanced more rapidly in the past 50 years than in the preceding 5000 years. We now understand in molecular terms the detailed workings of our bodies in health and disease. This course aims to provide some appreciation of the science involved in complex human systems. It gives an account of what biological molecules are and how they both function and malfunction.

Prerequisite Nil

\* *This course is not available in academic year 2003-2004.*

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#### **BIOC1001 Basic Biochemistry** (6 credits)

This course is designed to present an overview of biochemistry and to provide an understanding of the basic mechanisms underlying life processes. It is an independent course which can be taken by students from various disciplines. The course also prepares students for further studies in Biochemistry and Molecular Biology.

Prerequisite AS Biology or AS Chemistry

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#### **BIOC1003 Introduction to Molecular Genetics** (6 credits)

The objectives of this course are to provide students with basic and up-to-date knowledge on the structures and functions of nucleic acids, to give students a general picture of the molecular process of gene expressions, and to introduce students to recombinant DNA technology.

Prerequisite AS Biology or AS Chemistry

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#### **BIOC2601 Metabolism** (6 credits)

This course aims to provide the basic concepts of metabolism: the events and the importance in relation to the survival of living organisms. Taken together with BIOC1001 and BIOC2602, this will lay the foundation for the more advanced courses offered in the Biochemistry discipline.

Prerequisite BIOC1001

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#### **BIOC2602 Understanding Metabolic Diseases** (6 credits)

To widen and deepen knowledge and understanding of metabolism. By using a problem-based learning (PBL) approach, students are trained in critical thinking and problem-solving skills. Students will be able to grasp the major effects on metabolic integration and control and they can use these concepts with greater confidence and success in approaching new problems and new areas of study.

Prerequisite BIOC1001

Co-requisite BIOC2601

**BIOC2603 Principles of Molecular Genetics (6 credits)**

To provide basic knowledge on molecular genetics, illustrating modern concepts with current experimental approaches and computer-assisted programmes. Together with BIOC3613 and BIOC3609 taken in the second year, a comprehensive background is provided for advanced study and/or research in molecular biology.

Prerequisite BIOC1001 or BIOC1003 or BIOL1102 or BIOL1106

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**BIOC2604 Essential Techniques in Biochemistry and Molecular Biology (6 credits)**

To give students a general overview of different experimental approaches and model systems, and to provide students with hands-on experience in basic biochemical and molecular techniques.

Prerequisite BIOC1001 or BIOC1003 or BIOL1102 or BIOL1106

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**BIOC2605 Understanding Cancer \* (6 credits)**

To demonstrate to the students how current research in molecular biology and biochemistry has improved tremendously our knowledge on the genesis of cancer, and how such newly acquired knowledge forms the basis of new strategies for combating against the disease.

Prerequisite BIOC1001 or BIOL1106

Co-requisite BIOC2603

\* *This course is not available in academic year 2003-2004.*

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**BIOC2606 Applied Human Biochemistry \* (6 credits)**

To enable the students to understand how molecular life sciences are applied in clinical immunology and clinical biochemistry. This course is particularly suited to those interested in pursuing a health-care-related career. The course incorporates problem-based learning to enhance life-long learning skills.

Prerequisite BIOC1001 or BIOC1002

Co-requisite Nil; preferably taken in the 3<sup>rd</sup> year

\* *This course is not available in academic year 2003-2004.*

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**BIOC2607 Neurochemistry \* (6 credits)**

To introduce various basic concepts in modern neurochemistry. To prepare students with fundamental background for state-of-the-art research in neurosciences.

Prerequisite BIOC1001

Co-requisite BIOC3610

\* *This course is not available in academic year 2003-2004.*

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**BIOC3608 Introduction to Bioinformatics (6 credits)**

This course will examine existing programs and services available on the World Wide Web for DNA and protein sequence analysis. Students will also learn how to use the sequence analysis GCG package installed locally. The underlying principles of these analysis programs and services will be presented. Students will learn how to retrieve, analyze, and compare protein and DNA sequence similarities. A basic introduction to protein modeling will also be presented.

Prerequisite BIOC2603 or BIOL2303 or BIOL3308

**BIOC3609 Molecular Medicine** \* (6 credits)

To provide up-to-date knowledge of the genetic and molecular basis of human diseases in preparation for a career in medical molecular biology or pathology, biotechnological, pharmaceutical and biochemical industries and genome research.

Prerequisite BIOC2603 or BIOL2303

\* *This course is not available to students taking BIOL3308 Applied Molecular Biology and/or BIOL3213 Advanced Techniques and Instrumentation in Animal Biology.*

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**BIOC3610 Advanced Biochemistry I** (6 credits)

This is part of the advanced series designed to bring students to the understanding of current concepts, physicochemical bases and techniques in modern Biochemistry. The aim is to help students to develop critical thinking and analytical skills thus equipping them for beginning research projects or professional trainings in biomedical sciences.

Prerequisite 1) BIOC1001; and 2) BIOL2301; and 3) BIOC2601 or BIOL2115

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**BIOC3611 Advanced Biochemistry II** (6 credits)

This is part of the advanced series designed to bring students to the understanding of current concepts, physical bases and techniques in modern biochemistry. Hence to equip them for beginning research projects or professional training in biosciences.

Prerequisite BIOL3610

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**BIOC3612 Biochemistry Seminar** (6 credits)

To strengthen the student's capacity to critically assess, think, write and talk about issues in molecular life sciences. The course employs active learning in small groups; students will be guided to optimize their performance in teamwork and their communication skills.

Prerequisite 1) BIOC1001; and 2) BIOC2601 or BIOC2603

Co-requisite Nil; preferably taken in the 3<sup>rd</sup> year

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**BIOC3613 Molecular Biology of the Gene** (6 credits)

To provide an up-to-date knowledge of molecular biology, especially with respect to eukaryotic gene expression, molecular embryology.

Prerequisite BIOC2603 or BIOL2303 or BIOL3308

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**BIOC3614 Biochemistry Project** (12 credits)

To enable students to acquire the basic skills in scientific research: literature search, critical reasoning, communication, teamwork and time management. The course is particularly useful for those students who intend to pursue a career in life science.

Prerequisite BIOC1001 and BIOC2604 and good overall performance in 2<sup>nd</sup> year courses

Co-requisite BIOC3610, BIOC3611, BIOC3612

**BIOC3615     Advanced Techniques in Biochemistry and Molecular Biology** (6 credits)

This is an advanced experimental-based course for students majoring in Biochemistry and related disciplines. The aim is to provide the necessary training for students to pursue postgraduate research education and potential employment in a scientific laboratory/industry environment.

Prerequisite     1) BIOC1001; and 2) BIOC0002 or BIOC1003; and 3) BIOC2604

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**Biochemistry / Botany / Zoology****BIOL2301     Protein Structure and Function** (6 credits)

To provide students with a good understanding of protein structure, how structure subserves function, and the methods for study of both. This course provides a strong foundation for advanced courses in biochemistry and biotechnology.

Prerequisite     BIOC1001 or BIOL1102

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**Botany****BIOL2109     Crop Science and Economic Botany** (6 credits)

To provide an understanding of the inherent characteristics of the individual plant, and of the crop, which limit their productivity; to examine cultural practices from more fundamental principles and to introduce methods in the analysis of crop productivity and economics.

Prerequisite     BIOL1101 or BIOL1102

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**BIOL2111     Molecular Microbiology** (6 credits)

This course is intended for biology, biotechnology and biochemistry students who would like to understand the modern fundamentals of microbiology. At the end of the course the students are expected to know the physiological, biochemical and molecular aspects of microbiology.

Prerequisite     BIOL1101 or BIOL1102 or BIOL1103

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**BIOL2112     Plant Physiology** (6 credits)

To give an understanding of plant processes such as plant growth and development and their regulatory mechanisms.

Prerequisite     BIOL1101 or BIOL1102

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**BIOL2114     Plant Biochemistry and Molecular Biology** (6 credits)

To present current developments in selected areas of plant biochemistry and plant molecular biology.

Prerequisite     BIOL1102

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**BIOL2313     Intermediate Botany Project** (6 credits)

This course is designed for students who wish to gain research experience at an early stage of their degree. It provides an opportunity to do an individual experimental research project supervised by a member of the Department of Botany.

Prerequisite     Relevant first year courses

**BIOL3309 Botany Project (12 credits)**

To provide experience of biological research by planning and carrying out a small project under the supervision of a member of staff.

Prerequisite Good performance in level 2 courses

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**BIOL3311 Botany Dissertation (6 credits)**

Students will undertake a dissertation on an agreed topic in plant sciences, microbiology or food science. The student will develop scientific writing and presentation skills, and will make extensive use of IT and library resources.

Prerequisite Requires completion of relevant level 2 courses

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**Botany / Ecology & Biodiversity / Zoology****BIOL0001 Ecology of Hong Kong (3 credits)**

This course covers the ecology and biodiversity of terrestrial, marine and freshwater environments in Hong Kong. Attention will be focused on seasonality, zonation, succession and long-term changes of plants and animals in a wide range of Hong Kong habitats. Case studies on marine and terrestrial protected areas in Hong Kong will also be presented.

Prerequisite Nil

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**BIOL0002 Introduction to Food Science (3 credits)**

The course enables students to gain an appreciation of the scope of Food Science as a discipline. This is an independent course which can be taken by students from various disciplines. It also prepares students for further studies in Food and Nutritional Science.

Prerequisite Nil

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**BIOL0120 The Gene \* (3 credits)**

The objective of the course is to expose students to the impacts of gene to the modern society. With the completion of the human genome in the next three years not only promises a better quality of life, it also brings lots of technical and ethical issues that the general public need to deal with. The goal of the course is designed to open up students from all backgrounds to this basic unit of inheritance called gene and its impact on various other scientific and social disciplines. Outline includes but not limited to the chemical basis of gene, gene evolution, gene chips, animal cloning, gene and disease, human genome and computer science, gene and behavior, genetic implications to law and society.

Prerequisite Nil (not offered to students with AL Biology)

\* *Students with a pass in AL / AS Biology or who are in the Biology, Biochemistry, Animal and Plant Biotechnology, Environmental Life Science, and Food and Nutritional Science programmes are not allowed to take this course.*

**BIOL1101     Animal and Plant Diversity (9 credits)**

The objective of the course is to provide an introduction to the diversity of life on earth. The plant and animal kingdoms will be examined in a systematic way through anatomical and functional studies of the major taxa. Representatives of the more important groups will be examined in greater depth in the practicals. The course forms the basis for all other studies in ecological, experimental and applied plant and animal sciences in the later years of the B.Sc. curriculum.

Prerequisite     AL Biology

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**BIOL1102     Functional Biology (9 credits)**

The course is designed to provide an introduction to modern developments in experimental biology through an integrated approach. Life processes will be examined at the molecular, cellular and organismic level.

Prerequisite     AL Biology

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**BIOL1103     Environmental Biology (9 credits)**

The environment influences organisms profoundly. It affects their present-day ecology (determining where they live and how many can survive there) and, through natural selection acting over past generations, influences their form and adaptations. This course introduces the basic principles of ecology and evolution, showing how they are linked to the environment by the phenomenon of adaptation. Individuals and populations, as well as their interactions (e.g. mating systems, social behaviour, competition, predation) and the communities that they make up, are described thus providing a foundation for an understanding of the maintenance of biodiversity. This leads into an account of human threats to natural environments, especially those in Hong Kong.

Prerequisite     AL Biology

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**BIOL1104     Biological Techniques, Instrumentation and Data Processing (6 credits)**

To show students the basic techniques and principles of instruments and data processing.

Prerequisite     AL or AS Biology

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**BIOL1105     Food Chemistry (6 credits)**

The course is designed to give students a basic understanding of chemistry of the major and minor components in food systems.

Prerequisite     AL or AS Chemistry

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**BIOL1106     Genetics (3 credits)**

The objective of the course is to provide an introduction to the various aspects of genetics. At the end of the course students are expected to know the fundamentals of classical, population and molecular genetics.

Prerequisite     AL Biology



**BIOL1107 Introduction to Developmental Biology & Reproduction (3 credits)**

The course is designed to provide an introduction to developmental biology and reproduction animals through an integrated approach. Reproductive and developmental processes will be examined at the cellular and organismic levels.

Prerequisite AL Biology

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**BIOL1119 Introductory Microbiology (6 credits)**

The course will provide an introduction to the microbial diversity of life on earth including bacteria, fungi, microalgae, viruses, and other microorganisms. Emphasis will be placed on organisms that are of importance in our everyday lives. The course will also include components of biotechnological, food and medical microbiology. The course will provide an essential foundation for all biology students, as an understanding of the role and uses of microorganisms is a basic requirement of most biological subjects. The course leads to various 2<sup>nd</sup> and 3<sup>rd</sup> level courses in microbiology.

Prerequisite AL Biology

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**Botany / Zoology****BIOL2115 Cell Biology (6 credits)**

To provide a coherent understanding of the structure and function of cells through integration of the approaches of cytochemistry, ultrastructure, biochemistry and physiology. To provide some basic training in techniques used in cell biology and is open to all students in Biology/Biochemistry/Biotechnology and Food and Nutritional Science.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103 or BIOC1001

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**BIOL2116 Genetics I (6 credits)**

This is the first of an integrated pair of courses, Genetics I and Genetics II, aiming to provide balanced coverage of many areas in genetics. The focus of Genetics I is on the basic principles of genetics. Genetics II will cover more advanced topics of modern genetics.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

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**BIOL2117 Genetics II (6 credits)**

This is the second of an integrated pair of courses, Genetics I and Genetics II, aiming to provide balanced coverage of many areas in genetics. The focus of Genetics I is on the basic principles of genetics. Genetics II covers more advanced topics of genetics.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

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**BIOL2211 Tissue Culture & Cell Technology (6 credits)**

This course will give you an understanding of the theoretical and practical basis for the use of plant and animal cell cultures in research and industry.

Prerequisite BIOL1102

**BIOL2302 Fermentation Technology (6 credits)**

To introduce the key concepts and principles involved in fermentation technology, and discuss how fermentation technology is used in the food and biotechnology industries.

Prerequisite BIOL1102 or BIOL1105 or BIOL1108

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**BIOL2303 Introduction to Molecular Biology (6 credits)**

To provide students with basic knowledge in molecular biology and gene cloning techniques with emphasis on manufacturing of cell products. This course will give Biology students a complete picture of the recent developments and applications in gene technology and prepare biotechnology students for further advanced course in genetic engineering.

Prerequisite BIOL1101 or BIOL1102

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**BIOL2304 Aquacultural Biotechnology (6 credits)**

This course discusses modern technologies and laboratory support for aquaculture and the processing of aquaculture products.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

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**BIOL2305 Agricultural Biotechnology (6 credits)**

This course discusses applications of biotechnology in agriculture and animal husbandry.

Prerequisite BIOL1102

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**BIOL2501 Food Processing and Preservation (6 credits)**

An introduction to the basic principles and methodology of food processing and preservation technology with emphasis on major methods including high and low temperature processing, concentration and dehydration, and food packaging.

Prerequisite BIOL0002 or BIOL1105

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**BIOL2502 Food Technology (6 credits)**

This course is intended for students planning to enter the food industry. This course offers an introduction to physical and engineering principles relevant to the food industry, and an in-depth analysis of selected methods and problems in food processing and preservation.

Prerequisite BIOL0002 or BIOL1105

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**BIOL2503 Cereal Science and Technology (6 credits)**

To provide a broad understanding of the utilization and significance of the major cereal grains in the food industry and in human health and nutrition.

Prerequisite BIOL0002 or BIOL1102 or BIOL1105

**BIOL2504 Food Analysis and Product Development (6 credits)**

To introduce the key concepts in professional food analysis in an industry context. To discuss the choice of analytical methods and the interpretation of results. Active student participation is expected. Students will work in small groups to design and produce a new food product.

Prerequisite BIOL1104

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**BIOL2505 Food Safety and Quality Management (6 credits)**

To provide exposure to some key management concepts used to produce safe high-quality food products that will succeed in the marketplace. To introduce students to the use of the business case-study method in individual, team and class-based learning.

Prerequisite BIOL0002 or BIOL1105

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**BIOL2506 Gastrointestinal Physiology (6 credits)**

To obtain a comprehensive understanding on the structure and function of the gastrointestinal system of both humans and animals.

Prerequisite BIOL1101 or BIOL1102

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**BIOL2507 Meat and Dairy Science (6 credits)**

To provide a broad understanding on modern practice and technology of meat and dairy production, processing and marketing.

Prerequisite BIOL1102 or BIOL1105

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**BIOL2508 Food Toxicology (6 credits)**

To provide an understanding of the basic concepts of toxicology and to discuss the major types of toxins found in food and food handling processes.

Prerequisite BIOL1105

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**BIOL2509 Functional Foods (6 credits)**

Functional Foods or Nutraceuticals have been rapidly gaining market share as food supplements in the modern diet in addition to the traditional vitamins and mineral supplements. This course discusses the issues revolving around the development and marketing of these products, and includes topics such as the role of special food ingredients to reduce the risk of cardiovascular diseases, and cancer; to modulate immune functions, mood and performance; and in the control of food intake and weight management. The use of special proteins, amino acids, and medical foods, including Traditional Chinese Medicine, to provide support for certain medical conditions will be assessed. Testing for pharmacological activity, bioavailability, efficacy, stability, and toxicity, and manufacturing and packaging standards (GLP and GMP practices) required to gain approval by regulating agencies, e.g. U.S. Food and Drug Administration, will also be discussed.

Prerequisite BIOL1105

Co-requisite BIOL3511

**BIOL2510 Nutrition and Metabolism (6 credits)**

This is an independent course compulsory for students in the Food and Nutritional Science programme, but also opens to students in Biotechnology, or Biology.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

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**BIOL3306 Applied Genetic Engineering (6 credits)**

This is a follow-up course on the application of molecular biology techniques in problem solving. The course content will be modified regularly so as to accommodate new advances in the rapidly expanding field of genetic engineering applications.

Prerequisite BIOL2303 or BIOL2603

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**BIOL3307 The Biotechnology Industry (6 credits)**

This course provides an overview of the various fields of biotechnologies, the development of a biotechnology product, and the operation of biotechnology companies.

Prerequisite BIOL2303 or BIO2603

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**BIOL3511 Nutritional Physiology (6 credits)**

The impact of nutritive and non-nutritive dietary components on body physiology will be examined. This course is a specialized follow-up to BIOL2510.

Prerequisite BIOL2510

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**BIOL3512 Diet and Disease (6 credits)**

The course deals with diseases associated with diet and basic dietetics.

Prerequisite 1) BIOL1102; and 2) BIOL2506; and 3) BIOL2510

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**Business****BUSI0003 Advanced Financial Accounting (6 credits)**

Application of accounting theory to the preparation of accounting standards and their implications for reporting purposes, particularly those related to the consolidation of group accounts, asset valuation and the influence on income determination. Other topics may include current cost accounting, income tax allocation, government entities and nonprofit organizations.

Prerequisite BUSI0020

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**BUSI0004 Advertising Management (6 credits)**

This course is designed as a capstone course that integrates a firm's marketing decisions. It covers a firm's strategic market orientation, its allocation of resources and effectiveness of its marketing strategies. The course emphasizes managerial implications for different types of firms. Students will learn how to apply the course contents through indepth studies of firms, research projects and management cases.

Prerequisite BUSI1004

**BUSI0006     Auditing (6 credits)**

Professional ethics, and the social and legal responsibilities of auditors; basic auditing concepts and principles; evidence; evaluation of internal control; standard procedures and methods of investigation.

Prerequisite     BUSI0020

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**BUSI0010     Company Law (6 credits)**

Formation of companies; memoranda and articles of association. Powers and duties of directors, secretaries and auditors. Shareholders' rights and powers and the role of the courts. Takeovers, mergers and Investments; statutes, regulations and codes. Insolvency law and practice.

Prerequisite     Nil. But it is advisable to take BUSI1001 Business Law prior to this course.

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**BUSI0018     Hong Kong Taxation (6 credits)**

A study of the accounting for, and management of, taxes on income under the Inland Revenue Ordinance, within the context of taxation theory.

Prerequisite     BUSI1002

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**BUSI0019     Intermediate Accounting I (6 credits)**

The course provides an in-depth knowledge of the first part of financial accounting. It covers the environment of financial accounting and the development of accounting standards; conceptual framework underlying financial accounting; statement of income and retained earnings; balance sheet; accounting and the time value of money; cash and receivables; valuation of inventories; acquisition and disposition of property, plant and equipment; depreciation and depletion; intangible assets; current liabilities and contingencies; long-term liabilities; temporary investments and long-term investments; and revenue recognition.

Prerequisite     BUSI1002

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**BUSI0020     Intermediate Accounting II (6 credits)**

This course provides an in-depth knowledge of the second part of financial accounting. It covers stockholders' equity; dilutive securities and earnings per share calculations; accounting for income taxes; accounting for pensions and postretirement benefits; accounting for leases; accounting changes and error analysis; statements of cash flows; basic financial statement analysis; and full disclosure in financial reporting.

Prerequisite     BUSI0019

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**BUSI0022     International Marketing (6 credits)**

This course shows how the basic principles of marketing can be applied to the problems of marketing across national boundaries and within foreign countries. Attention is paid to the development of global marketing strategies and to the different approaches needed to market consumer items; industrial goods and services internationally.

Prerequisite     BUSI1004

**BUSI0027      Management Accounting I (6 credits)**

The theory and techniques involved in serving the accounting needs of management in the decision making, control, evaluation and motivational aspects.

Prerequisite      BUSI1002. Students taking or have taken BUSI0007 Budgetary Planning and Control are not allowed to take this course or vice versa.

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**BUSI0028      Management Accounting II (6 credits)**

A course on advanced problems in managerial accounting and management information and reporting systems for planning and control of operations. In particular it will include problems associated with large decentralized companies – divisional performance control, measurement and evaluation; transfer pricing.

Prerequisite      BUSI0027

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**BUSI0029      Human Resource Management and Business Strategy (6 credits)**

This course proposes to look at the basic concepts of human resource management (HRM) and its application to Hong Kong. Emphasis will be placed on the strategic linkage between HRM and corporate management in the context of business changes and re-structuring. Comparative references will also be made to practices elsewhere in other industrial societies.

Prerequisite      Nil

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**BUSI0031      Marketing Research (6 credits)**

This course will cover the broad principles of marketing research. Emphasis will be placed on the use of marketing research as an aid to decision taking. In this spirit students will be introduced to a variety of types of marketing research data. Students will be given the opportunity to engage in practical marketing research based exercises.

Prerequisite      BUSI1004

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**BUSI0034      Human Resources: Theory & Practice (6 credits)**

A course that draws upon an understanding of organizational behaviour to examine the techniques and practice of HRM. Topics include HRM and corporate strategy, human resource planning, recruitment and selection, performance management, training development, employee relations.

Prerequisite      Nil

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**BUSI0071      Strategic Marketing Management (6 credits)**

This course is designed as a capstone course that integrates a firm's marketing decisions. It covers a firm's strategic market orientation, its allocation of resources and effectiveness of its marketing strategies. The course emphasizes managerial implications for different types of firms. Students will learn how to apply the course contents through indepth studies of firms, research projects and management cases.

Prerequisite      1) BUS1004; and 2) BUSI0031

**BUSI1001 Business Law (6 credits)**

An introduction to the Hong Kong legal system, the fundamentals and general principles of Hong Kong law. Other legal concepts which a manager may be expected to encounter in the business environment.

Prerequisite Nil

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**BUSI1002 Introduction to Accounting (6 credits)**

The course will cover the principles of double entry book-keeping, the interpretation of financial statements, the issues raised by corporate regulation, and the use of management information for decision making.

Prerequisite Nil

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**BUSI1003 Introduction to Management Information Systems (6 credits)**

The objectives of this course, are to (i) examine the new opportunities and challenges brought about by technological developments, and (ii) outline effective ways information technology can be utilised in different functional areas of the business to sustain the firm strategic position in today interrelated global market.

Prerequisite Nil

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**BUSI1004 Marketing (6 credits)**

An introductory course on the basic concepts of marketing and their implications in management. The ingredients of the Marketing Plan will be analysed and the problems involved in formulating marketing strategy; interpreting marketing data and coping with the changing market environment will be examined.

Prerequisite Nil

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**BUSI1005 Organizational Behaviour (6 credits)**

A course on the concepts and key research findings used in the understanding of human behaviour in organizations. Topics include motivation, leadership theory, group dynamics, morale, communications, control techniques and organizational culture.

Prerequisite Nil

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**Chemistry****CHEM0003 Chemistry and Daily Life \* (3 credits)**

This general education course is designed as an elective for students in all disciplines and all years without strong chemistry background. It gives an overview of some important chemical aspects that we encounter in our daily life.

Prerequisite Nil (not offered to Chemistry major students)

\* *Students who are taking or have taken CHEM1101 or CHEM1502 or YSCN0011 are not allowed to take CHEM0003.*

**CHEM1001 Chemical Principles for Earth and Life Sciences** # (6 credits)

To provide basic chemical knowledge for the understanding of the involvement of chemistry in processes taking place on earth and in biological systems.

Prerequisite AL or AS Chemistry

# *Students who are taking or have taken any one of the courses CHEM1301, CHEM1406 and CHEM1502 cannot take CHEM1001.*

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**CHEM1201 Introductory Analytical Chemistry** (3 credits)

To provide basic knowledge of analytical chemistry. This course is a pre-requisite for the analytical chemistry courses in the second and third years.

Prerequisite AL or AS Chemistry

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**CHEM1301 Basic Inorganic Chemistry** \* (6 credits)

To provide students with the basic principles and knowledge in inorganic chemistry and to introduce its relevance to biological processes and materials science.

Prerequisite AL Chemistry

\* *Students who are taking or have taken any one of the courses CHEM1301, CHEM1406 and CHEM1502 cannot take CHEM1001.*

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**CHEM1401 Fundamentals of Organic Chemistry** \* (6 credits)

To provide students entering biological, health related or environmental fields with basic knowledge in organic chemistry.

Prerequisite AL or AS Chemistry

\* *CHEM1401 and CHEM1406 are mutually exclusive.  
Students who are planning to take CHEM2402 should take CHEM1406.*

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**CHEM1406 Basic Organic Chemistry** \* (6 credits)

To educate the student in the terminology, methodology and problem solving skills appropriate to the study of carbon based molecules in both their academic and practical applications.

This course is a pre-requisite for CHEM2402, Intermediate Organic Chemistry.

Prerequisite AL or AS Chemistry

\* *CHEM1401 and CHEM1406 are mutually exclusive.  
Students who are taking or have taken any one of the courses CHEM1301, CHEM1406 and CHEM1502 cannot take CHEM1001.*

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**CHEM1501 Applied Spectroscopy and Structure** (6 credits)

To introduce the principles of the four spectroscopic techniques (UV, IR, NMR, MS) commonly used in organic and inorganic chemistry, and their application to determining chemical structure.

Prerequisite AL or AS Chemistry



**CHEM1502 Basic Physical Chemistry** \* (9 credits)

The object of the course is to provide an understanding of the fundamental concepts in physical chemistry as a basis for study at the intermediate and advanced levels.

Prerequisite AL Chemistry

\* *Students who are taking or have taken any one of the courses CHEM1301, CHEM1406 and CHEM1502 cannot take CHEM1001.*

*Students who are taking or have taken CHEM1101 or CHEM1502 are not allowed to take CHEM0003.*

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**CHEM2002 Instrumental Chemical Analysis** \* (6 credits)

To cover the basic principles and applications of chemical instrumentation for biological, geological, and environmental analysis. This course aims to provide a good working knowledge, in addition to the principles, of instruments that are commonly used in a chemical laboratory.

Prerequisite CHEM1001

\* *CHEM2002 Instrumental Chemical Analysis is not available to students who are taking or have taken CHEM2202 Chemical Instrumentation.*

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**CHEM2102 Environmental Chemistry** (6 credits)

This course introduces students to Environmental Chemistry and enables them to understand the chemical principles involved in various environmental phenomena and processes.

Prerequisite CHEM1001 or CHEM1502

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**CHEM2103 Chemical Process Industries and Analysis** (6 credits)

To familiarize with typical chemical industries important in local and global economy. To understand the technology of chemicals manufacturing and chemical processes in general industry.

Prerequisite CHEM1502

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**CHEM2108 Intermediate Chemistry Project** \* (6 credits)

This course is designed for second year students who would like to take an early experience on research. It offers students an opportunity to carry out small scale chemical projects by themselves.

Prerequisite CHEM1201, CHEM1301, CHEM1406, CHEM1501 and CHEM502

\* *Exceptional academic strength of the students is required for taking this course.*

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**CHEM2202 Chemical Instrumentation** (6 credits)

To cover the basic principles and applications of chemical instrumentation. This course aims to provide a good working knowledge, in addition to the principles, of instruments that are commonly used in a chemical laboratory.

Prerequisite CHEM1001 or CHEM1201

**CHEM2302 Intermediate Inorganic Chemistry (9 credits)**

This course aims to provide a more detailed treatment of general inorganic chemistry suited to the needs of those intending to extend their studies in chemistry.

Prerequisite CHEM1301

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**CHEM2402 Intermediate Organic Chemistry (9 credits)**

This course is a continuation from Basic Organic Chemistry. Together they provide a solid foundation of organic chemistry.

Prerequisite CHEM1406

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**CHEM2503 Intermediate Physical Chemistry (9 credits)**

This course presents a more detailed treatment of general physical chemistry topics in order to provide a solid foundation for those students intending to extend their studies in chemistry further. This course would stand on its own.

Prerequisite CHEM1502

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**CHEM3104 Chemistry of Materials (6 credits)**

This course provides an overview on materials chemistry and applications of materials in different aspects. Some basic material characterization techniques and the current development of materials for advanced technology will also be introduced.

Prerequisite CHEM2302 or CHEM2402

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**CHEM3105 Chemistry Project \* (12 credits)**

To provide experience of research techniques by working on a short project under the direct supervision of a member of staff. This course would prepare students for graduate school work in chemistry.

Prerequisite 1) CHEM2202; and 2) CHEM2302; and 3) CHEM2402; and 4) CHEM2503

\* *Second year students with exceptional academic achievement may also apply for this course.*

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**CHEM3106 Symmetry, Group Theory and Applications (6 credits)**

To introduce the concepts of symmetry and group theory and to apply them in solving chemical problems. This course also provides an introductory treatment of bonding theories, inorganic electronic and vibrational spectroscopy. This course is essential for students who wish to take advanced courses in inorganic chemistry and all types of spectroscopy.

Prerequisite CHEM2302

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**CHEM3107 Interfacial Science and Technology (6 credits)**

To understand the science and technology of interfacial phenomena and processes often appeared in high value added products and modern technologies.

Prerequisite CHEM2503

**CHEM3203 Analytical Chemistry I (9 credits)**

To cover the principles of Analytical Chemistry and its use for the analysis of gas, liquid and solid samples.

Prerequisite CHEM2202

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**CHEM3204 Modern Chemical Instrumentation and Applications (6 credits)**

The aim of the course is to provide an understanding of modern instrumentation, covering both fundamental principles and practical aspects of instrument design. The course will be of particular benefit to those pursuing a higher research degree or a career in technical sales/service.

Prerequisite CHEM2202

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**CHEM3205 Analytical Chemistry II (6 credits)**

To cover the application of Analytical with focus on environmental monitoring and assessment, water analysis, food and drugs analysis and new analytical techniques development.

Prerequisite CHEM2202

Co-requisite CHEM3203

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**CHEM3303 Advanced Inorganic Chemistry (9 credits)**

To give further, more detailed, treatment to topics mentioned in Intermediate Inorganic Chemistry and to develop new areas of interest. The course also aims to prepare students for graduate work in inorganic chemistry.

Prerequisite CHEM2302

Co-requisite CHEM3106

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**CHEM3304 Organometallic Chemistry (6 credits)**

To give further, more detailed, treatment to organometallic chemistry mentioned in Intermediate Inorganic Chemistry. The course also aims to introduce and familiarize students with advanced laboratory techniques, and to prepare students for graduate work in inorganic and organometallic chemistry.

Prerequisite CHEM2302

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**CHEM3403 Organic Synthesis (9 credits)**

This course covers modern synthetic methods, and develops the concept of synthetic planning.

Prerequisite CHEM2402

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**CHEM3404 Advanced Topics in Organic Chemistry (6 credits)**

To provide students with knowledge in organic chemistry reaction mechanisms and organic compound structure determination.

Prerequisite CHEM2402

**CHEM3405 Organic Chemistry of Life** (6 credits)

To understand molecules and reactions of life sciences. Useful as an introduction to research in areas of bioorganic chemistry, bioinorganic chemistry, medicinal chemistry, and biotechnology.

Prerequisite CHEM2402

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**CHEM3407 Medicinal Chemistry** \* (6 credits)

This course covers the chemical principles of drug design and drug action. Useful as an introduction to research in areas of bioorganic chemistry, bioinorganic chemistry, medicinal chemistry, pharmaceutical chemistry, and biotechnology.

Prerequisite CHEM2402 and preferably CHEM3405

\* Offered in 2004-2005.

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**CHEM3504 Advanced Physical Chemistry** (9 credits)

This course covers advanced topics in physical chemistry. It is offered for students majoring in physical chemistry and for students who are interested in postgraduate studies.

Prerequisite CHEM2503

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**CHEM3505 Molecular Spectroscopy** (6 credits)

This course provides a unifying treatment of the theories and applications of some important types of spectroscopy. Essential for graduate work in all branches of chemistry.

Prerequisite CHEM2503

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**Chinese****CSCI0001 Practical Chinese Language Course for Science Students** \* (3 credits)

- (1) Practical Chinese Writing Skills
  - (a) Classical and modern Chinese
  - (b) The Chinese language: characteristics and usage
  - (c) Basic grammar of modern Chinese
- (2) Chinese Characters
  - (a) Traditional characters
  - (b) Simplified characters
  - (c) Variant forms
- (3) Letter-writing
  - (a) Business letter writing techniques
  - (b) Official letter writing techniques
- (4) Office Documents
  - (a) Notices and announcements
  - (b) Proposals
  - (c) Minutes and reports of meetings
- (5) Chinese for Special Purposes
  - (a) An introduction to science and technology in ancient China
  - (b) Reader-based scientific/technical writings
  - (c) Styles and rhetoric of scientific/technical writings
- (6) Presentation and Communication Techniques
  - (a) Communication and presentation techniques
  - (b) Discussion and the art of persuasion

Prerequisite Nil

\* This course is compulsory for all BSc students.

**CSCI0002 Putonghua Course for Science Students** \* (no credit)

The course is divided into three parts:

- (i) Pronunciation;
- (ii) The *pinyin* system;
- (iii) Texts: greetings, numbers, inquiry, time & appointments, asking for direction, shopping, making phone calls, at the bank, in the post office, food and science terminology.

Prerequisite Nil

\* *This course is available for BSc I students only.*

*Average class size is around 30. Only students having attend not less than 80% of the classes will be allowed to sit the final examinations.*

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**CSCI2002 Advanced Language Studies in Chinese** (3 credits)

- (1) To hone students' communicative skills in Chinese. This course aims to improve their reading, listening, writing and speaking abilities in Chinese.
- (2) To expose students to different aspects of the language. This course covers a wide range of both linguistic and extra-linguistic subject matters, the knowledge of which would enable the students to use the language in an efficacious way.
- (3) To give pre-service language training to students. This course equips the students with language proficiency to get and secure a job.
- (4) To promote deeper understanding of Chinese culture. This course identifies areas of Chinese culture that are essential for the students to understand their society better.

Prerequisite CSCI0001

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**Computer Science and Information Systems****CSIS0901 Computer Concepts and Applications** \* (6 credits)

This course introduces the basic concepts, essential vocabulary, and major themes of computing; and presents an overview of the application of computing in various domains.

Prerequisite Nil

\* *This course is for non-Engineering students only.*

*Not available in 2003-2004.*

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**CSIS0911 Computer Concepts and Programming** \* (6 credits)

This course introduces the basic computing concepts and the art of computer programming.

Prerequisite Nil

\* *This course is for non-Engineering students only.*

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**CSIS0912 Data Structures and Program Design** \* (6 credits)

This course gives the appreciation of various types of data structures and algorithms that are commonly used in software development. Program design methodologies are also introduced.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.*

**CSIS0913 Computer Organization and Operating Systems** \* (6 credits)

This course introduces the key hardware and software components of a computer system and their organization.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.*

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**CSIS0921 Database Management and Design** \* (6 credits)

This course covers the foundations necessary to design and implement a database, and to use a database management system effectively. The database approaches are introduced and major models are reviewed. Current ideas and tools are discussed and practiced.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.*

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**CSIS0922 Introduction to Computer Graphics** \* (6 credits)

This course introduces the concepts and applications of computer graphics.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.*

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**CSIS0923 Multimedia Systems and Applications** \* (6 credits)

This course introduces the technologies and applications in multimedia computing. It covers the system aspects and issues of design and development of multimedia applications.

Prerequisite CSIS0911

Co-requisite CSIS0911

\* *This course is for non-Engineering students only.  
Not available in 2003-2004.*

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**CSIS0924 Internet and E-Commerce** \* (6 credits)

This course introduces the Internet as a medium for communication and information exchanges as well as a basis for electronic commerce and business.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.  
Not available in 2003-2004.*

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**CSIS0926 Information Technology and Society** \* (6 credits)

This course discusses the social impacts and implications of and legal issues related to information technology.

Prerequisite CSIS0911

\* *This course is for non-Engineering students only.  
Not available in 2003-2004.*

## Earth Sciences

### **EASC0001 Earth's Past and Future** \* (6 credits)

This course will provide students with knowledge of the nature and magnitude of change that has occurred in the Earth over a range of temporal and spatial scales. Specifically the course will contrast natural and anthropogenic processes of environmental change.

Prerequisite Nil

\* *Not available to Earth Sciences students.*

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### **EASC0002 Peaceful Use of Nuclear Technologies** (3 credits)

To provide students with the basic knowledge on application of nuclear technologies in daily life and to invoke an awareness of current applications of nuclear sciences by case studies.

Prerequisite Nil

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### **EASC0101 Maps, Mapping and Field Geology** (6 credits)

This field and class-based course introduces basic field and mapping techniques and the use of geological equipment, and presents an overview of the geology of Hong Kong and vicinity.

Prerequisite Nil

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### **EASC0105 Earth Through Time** (6 credits)

To introduce the concepts of geologic time and Uniformitarianism. To provide an understanding of the fossil record, and the integration of Earth Systems and Plate Tectonics. To gain an appreciation of our place in the Universe, an understanding of the evolution of Earth and life on Earth through time, and interaction between mankind and the geological environment.

Prerequisite Nil

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### **EASC1000 Earth's Dynamic System** \* (6 credits)

Based on the idea that the Earth operates as a number of dynamic systems, this course will introduce students to how our planet works, from the basic building blocks of rocks and minerals to the unifying concept of plate tectonics.

Prerequisite Any AL/AS subject

\* *Not available to Earth Sciences students.  
Not available in 2003-2004.*

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### **EASC1102 Mineralogy** (6 credits)

To provide a coverage of mineralogical principles: as a basis for understanding the petrography of igneous, sedimentary and metamorphic rocks.

Prerequisite 1 AL science subject

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### **EASC1103 Geochemistry** (6 credits)

To provide an understanding of chemical principles as they are applied to processes occurring on Earth, as a basis for the study of mineralogy, petrology and environmental geology.

Prerequisite 1 AL science subject

**EASC1104    Physics of the Earth** (6 credits)

An overview of the geophysical characteristics and processes of the solid earth, the atmosphere and the oceans. Emphasis is given to the methodologies for studying the earth's physical systems, and the understanding of geophysical data and models.

Prerequisite    1 AL science subject

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**EASC1106    Introduction to Petrology** (6 credits)

To provide an introduction to the principal rock types: igneous, metamorphic and sedimentary, and the relationships between them.

Prerequisite    1 AL science subject, EASC1102

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**EASC1107    Fluid/Solid Interactions in the Earth** (6 credits)

To provide an introduction to Earth processes and particularly to the nature of the properties and interactions of fluids and solids in the Earth system.

Prerequisite    1 AL science subject

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**EASC2108    Structural Geology** (6 credits)

The course covers the mechanical properties of rocks and how they are deformed, geological maps/air photos and their use in interpreting structure.

Prerequisite    EASC0101  
Co-requisite    EASC0101

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**EASC2109    Igneous and Metamorphic Petrology** (6 credits)

The object of this course is to provide a comprehensive coverage of the principles and techniques used in the study of rocks and rock-forming processes especially igneous and metamorphic.

Prerequisite    EASC1106

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**EASC2110    Earth Dynamics** (6 credits)

To review the concepts and processes that shape the configuration of the Earth, from core to crust.

Prerequisite    1) EASC1104; and 2) EASC1106

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**EASC2111    Surficial Processes and Environments** (6 credits)

This course provides students with an introduction to Earth surface processes, landscape evolution, and landscape diversity. Students learn to interpret natural landscapes in terms of both process-form relationships and the specific influence that geology has on landscape development. Soil formation and the importance of soils to landscape interpretation is also examined.

Prerequisite    Any level 1 Earth Sciences course



**EASC2112 Earth Systems (6 credits)**

The presentation of a process-oriented, integrated global approach to the study of the whole earth system and Man's place within it, with particular attention to the linkages and interactions between its parts (the geospheres).

Prerequisite All level 1 Earth Sciences core course

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**EASC2113 Sedimentology (6 credits)**

The course deals with sedimentary rocks and processes, and facies models pertaining to various depositional environments.

Prerequisite 1) EASC1106; and 2) EASC0105

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**EASC2201 Hydrogeology (6 credits)**

To study the role of water in subsurface geological process and its environmental and geotechnical importance.

Prerequisite EASC1107

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**EASC2301 Field Camps (6 credits)**

The aims of a geological field camp are to provide 1) essential training and experience in geological mapping techniques and 2) opportunities to study at first-hand areas of particular geological interest and importance, especially outside Hong Kong.

Prerequisite Students must have completed at least 42 credits of Earth Sciences courses.

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**EASC2306 Intermediate Earth Sciences Project (6 credits)**

This course is designed for second year students who would have an early introduction to Earth Sciences research. It provides students with the opportunity to do a small Earth Sciences project by themselves, either field or laboratory based. These projects are of a research nature and usually without lectures.

Prerequisite Passes in all Earth Sciences first year subjects.

Co-requisite GPA > 3

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**EASC3114 Earth Resources and Environments (6 credits)**

To study the range of earth materials that are commercial and exploitable, and the processes that lead to their formation. To consider economic, political and environmental aspects of mineral exploitation.

Prerequisite EASC2109

Co-requisite EASC2109

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**EASC3115 Regional Geology and Tectonics (6 credits)**

To cover the tectonic evolution of mainland East Asia and SE Asia, with a specific focus on the geology of Hong Kong.

Prerequisite 1) EASC2110; and 2) EASC2113; and 3) EASC2109; and 4) EASC2108

**EASC3202 Soil and Rock Mechanics (6 credits)**

To provide a basic knowledge of soil and rock mechanics for those wishing to consider further studies on a career in engineering geology/geotechnics.

Prerequisite EASC2201

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**EASC3203 Engineering Geology (6 credits)**

Introduction to the applications of geological data, techniques and principles to the study of natural materials (rock, soil and subsurface fluids), and the features and processes affecting the planning of land-use, and the planning, design, construction, operation and maintenance of engineering structures.

Prerequisite 1) EASC3202; and 2) EASC2201

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**EASC3302 Advanced Topics in Geosciences (6 credits)**

To provide students with insights into current issues in geosciences, and options to specialize in particular subject areas.

Prerequisite Students must have completed at least 36 credits of advanced Earth Sciences courses.

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**EASC3304 Applied Geosciences (6 credits)**

To provide students with insights in the applied fields of geosciences and allow students to acquire technical skills and training in particular field and instrumental techniques in geology, geophysics, and geochemistry.

Prerequisite Students must have completed at least 36 credits of advanced Earth Sciences courses.

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**EASC3305 Geology Project (6 credits)**

The course is intended to provide individual students with experience of geological research by working on a project under the supervision of a member of staff.

Prerequisite Students must have a B average in at least 36 credits of advanced Earth Sciences courses.

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**Ecology & Biodiversity****ECOL0001 Fungal Diversity (3 credits)**

To study the spectacular diversity of fungi and their roles in the environment. Fungi are extremely important in most of earth's processes and have developed interesting adaptations and forms. This course will examine the diversity and forms that fungi have taken and explore some of their unique roles in our environment.

Prerequisite Nil

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**ECOL1002 Life in Extremes & Astrobiology (3 credits)**

- (1) To understand the origins of life in extremes
- (2) To review the diversity and adaptations of life in extremes
- (3) To consider the possibility of detecting extraterrestrial life

Prerequisite AL Biology

**ECOL2003 Applied Microbiology** \* (6 credits)

- (1) To study the role of microorganisms in food production and in food spoilage. Methods to prevent food spoilage are discussed, and the results of food spoilage, including microbial toxin production are examined. The detrimental effects of microorganisms on plants and postharvest decay of foods will be briefly addressed.
  - (2) To examine the role of microorganisms in biotechnology including possible future applications.
- This course is particularly relevant to Biology, Food Science and Biotechnology programme students.

Prerequisite BIOL1108 or BIOL1119

\* *ECOL0001 and ECOL2003 are mutually exclusive.*

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**ECOL2004 Environmental Microbiology** (6 credits)

- (1) To consider the diversity, ecophysiology and interactions of prokaryotic and eukaryotic microorganisms in soil, air and aquatic habitats.
- (2) To examine the role of microorganisms in pollutant degradation and transformation, and their application in bioremediation technology.

Prerequisite BIOL1108

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**ECOL2005 Fish Biology** (6 credits)

To acquaint students with the principles governing interrelationships among fishes and with the biotic and abiotic aspects of their environment thereby to provide an understanding of the factors determining species population dynamics and multispecies interactions. Special emphasis will be placed on coral reef assemblages with an introduction to local reef fishes.

Prerequisite BIOL1101 or BIOL1103

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**ECOL2006 Biometrics and Computing** (6 credits)

This course treats experimental design and statistical data analysis at an elementary to intermediate level, with the emphasis on practical applications of statistical methods to experimental and observational data in biomedical and environmental sciences. We will make extensive use of statistical software such as SPSS & SAS, which is now a standard in statistical computing. SPSS is powerful, yet flexible and easy to use, and is available on HKU networked computers that every student has access to. PC laboratories will be reserved to help students get used to statistical computing with the SPSS software.

Prerequisite Students must have completed at least 27 credits of level 0 or 1 BIOL courses.

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**ECOL2007 Molecular Ecology** (6 credits)

- (1) To familiarize students with the mechanisms of evolution.
- (2) To explain, with the aid of appropriate case studies, the effects of evolutionary pressures on populations.
- (3) To give students hands-on experience of laboratory techniques commonly used in molecular ecology.

Prerequisite BIOL1103 or BIOL1106

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**ECOL2011 Biological Oceanography** (6 credits)

To introduce students to the physical, chemical, geological and biological processes that occur in oceans and their interactions, with particular emphasis on the biological components of oceanography. This module will look at global issues in oceanography, and draw on specific examples from the South China Sea.

Prerequisite BIOL1101, BIOL1103 or EASC0105

The course may also be of interest to students studying CHEM2102.

**ECOL2013 Systematics (6 credits)**

To give students an understanding of the principles of systematics and an appreciation of current trends and controversies. Systematics forms an invaluable grounding for many fields of biology (including anatomy, ecology, population biology and evolutionary biology), and enables the integration of a wide range of techniques (including anatomy, biochemistry, chemistry, molecular biology, cytology, palaeontology and ethology).

Prerequisite BIOL1101

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**ECOL2014 Conservation Biology (6 credits)**

To introduce students to the theory and practice of biological conservation.

Prerequisite BIOL1101 or BIOL1103

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**ECOL2016 Environmental Toxicology (6 credits)**

To introduce students to the basic principles of environmental and ecological toxicology. Specific cases from the current literature will be used and analyzed. Emphasis will be on aquatic ecosystems.

Prerequisite BIOL1103

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**ECOL2022 Biodiversity (6 credits)**

Biodiversity issues have become a growing global concern in the last decade. Students will explore these issues, defining the concept of biodiversity, exploring the methods of its evaluation and assessing the implications of its loss.

Prerequisite BIOL1103

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**ECOL2023 Fresh Water Ecology (6 credits)**

To introduce students to the diversity and adaptations of fresh waters, especially stream, plants and animals, and to give an understanding of the factors determining their distribution and abundance. Emphasis will be placed on local examples.

Prerequisite BIOL1101 or BIOL1103

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**ECOL2024 Plant Structure and Evolution (6 credits)**

To survey the form and function of vascular plant body, with particular emphasis on the evolutionary significance of various structures. This forms a basis for understanding plant physiology, ecology, systematics and phylogeny.

Prerequisite BIOL1101

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**ECOL2028 Coastal Ecology (6 credits)**

To examine the communities of coastal systems: their distribution, composition and the factors which regulate them. This course will examine, using an experimental approach, patterns exhibited by a range of shores and the deterministic and stochastic processes that create and sustain them. Hong Kong shores will be used as examples but comparisons will be drawn from the coastlines of the world.

Prerequisite 1) BIOL1101; and 2) BIOL1103

**ECOL2029 How Humans Evolved (6 credits)**

This course describes the origins of modern humans through evolution by natural selection. Major topics include tracing our evolution by means of the fossil record; our relationship to monkeys, apes and other primates; and, the main ecological and cultural transformations of our species over time. In short, this course answers the question: **where did we come from?** Emphasis is placed on ultimate causes: why have we evolved to become what we are today? And, what has driven human evolution?

Prerequisite BIOL1103

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**ECOL3018 Fisheries and Mariculture (6 credits)**

Theoretical and practical aspects of marine fisheries and mariculture will be covered to provide an understanding of the condition of global and local fishery resources as well as the contribution of biological and ecological studies to their management. The role of mariculture in global fish supply will be examined and local fishery and mariculture examples provided.

Prerequisite ECOL2005

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**ECOL3019 Ecology & Biodiversity Project (12 credits)**

Under the supervision of a member of staff, to plan, design and undertake a research project and then present and write up this project in a formal style.

Prerequisite Requires good performance in level 2 courses

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**ECOL3025 Ecology & Biodiversity Dissertation \* (6 credits)**

Students will undertake a dissertation on a topic related to the field of ecology and biodiversity. Conducting a dissertation is an independent learning experience and will enable students to develop skills including the use of library and Web-based resources; the logical development of scientific arguments; written presentation skills; and, personal time management.

Prerequisite Appropriate academic background

*\* This course is also available to Year 2 students with an exceptional academic record in Year 1 courses. Students having taken this course in Year 2 can take ECOL3019 Ecology & Biodiversity Project as a follow-up course in their third year.*

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**ECOL3027 Pollution and Environmental Impact Assessment (6 credits)**

To introduce students to the problems of pollution and the principles of Environmental Impact Assessment (EIA). The emphasis is on Hong Kong, where an EIA is required before all major developments.

Prerequisite BIOL1103

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**ECOL3030 Environmental Remediation (6 credits)**

To introduce types of environmental pollutants and current technologies for cleaning up contaminated sites. The emphasis is on recent research and technological development.

Prerequisite ECOL2004 and ECOL2016

**Economics and Finance****ECON0204 The Economics of Finance** \* (6 credits)

A survey of the economics theory underlying corporate and investment finance models, with emphasis on financial instruments. Topics include: balance sheet management and evaluation, capital market equilibrium and efficiency, evolution of credit and money market instruments like financial swaps, stocks and bonds, financial futures and options. Euro currencies and the role played by banks, insurance companies and other financial institutions.

Prerequisite ECON1001 or AL Economics

\* *Not offered by School in 2003-2004.*

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**ECON0205 Theories of Investment** (6 credits)

Applications of the theory of choice over time (capital theory) to the investment decisions of individuals, firms and economies, under different assumptions regarding certainty, uncertainty, and adjustment costs.

Prerequisite ECON1001

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**ECON0301 Theory of International Trade** (6 credits)

The theory of international trade; the bases, direction, terms, volume, and gains of trade. The effects of tariffs, quantitative restrictions; and international integration.

Prerequisite ECON1001 or AL Economics

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**ECON0302 International Finance** \* (6 credits)

The interpretation of balance of payments and the adjustment to national and international equilibria, through changes in price levels, exchange rates, and national income. Other topics may include: foreign exchange market and Eurocurrency market, alternative exchange rate regimes, capital movements, exchange controls, and international monetary organizations.

Prerequisite ECON1001 or AL Economics

\* *This course should be designate as a third year elective.*

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**ECON0401 Comparative Economic Systems** \* (6 credits)

Alternative approaches to the understanding of the operation of economic systems, including an approach based on different structures of property rights.

Prerequisite ECON1001

\* *Not offered by School in 2003-2004.*

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**ECON0403 The Economics of Property Rights** (6 credits)

Implications of different structures of property rights for economic behaviour; rights structures classified in terms of exclusivity and transferability; costs of enforcing rights and of forming contracts as main constraints in the derivation of hypotheses; the Coase Theorem and the theories associated with contracting.

Prerequisite ECON1001 or AL Economics

**ECON0701    Introductory Econometrics** (6 credits)

This course attempts to provide students with a working knowledge of the techniques of empirical study of economic problems.

Prerequisite    ECON1001 or AL Economics

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**ECON1001    Introduction to Economics I** (6 credits)

An introduction to the basic concepts and principles of economics, with emphasis on the theoretical framework of choice theory, the nature of constraints, the measure of value, the laws of demand and productivity, and the implications for resource use and employment.

Prerequisite    Nil

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**ECON2113    Microeconomics Analysis \*** (6 credits)

Examine microeconomic issues with applications. Topics include: consumer behaviour, cost structure, market structure, theory of the firm, factor market and general equilibrium.

Prerequisite    ECON1001 or AL Economics

*\* Open only to non-BEcon, non-BFin and non-BEcon & Fin students; candidates who have taken ECON2101 Microeconomic Theory are not allowed to take this course.*

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**ECON2114    Macroeconomics Analysis \*** (6 credits)

Economics of inflation, unemployment, income and output determination in the short run and the long run. Money, interest rates and exchange rates. Macroeconomic stabilization policies and open economy macroeconomic issues.

Prerequisite    ECON1001 or AL Economics

*\* Open only to non-BEcon, non-BFin and non-BEcon & Fin students; candidates who have taken ECON2102 Macroeconomic Theory are not allowed to take this course.*

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**FINA0302    Corporate Finance** (6 credits)

A course on the advanced treatment of corporate financial decisions. Topics to be covered include corporate valuation; cost capital; capital structure; leasing; mergers and acquisitions; options; warrant; and convertible bonds.

Prerequisite    ECON1001 or AL Economics, BUSI0016 or FINA1002

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**FINA1001    Financial Statement Analysis** (6 credits)

This course covers the basic issues and principles of fundamental analysis, which deals with the valuation of a firm's equity shares and debt by using the information of financial statements. The objective of this course is to enable students to understand the key financial statements, important elements of financial statement analysis, and the application of financial statement analysis to forecasting and valuation analysis.

Prerequisite    Nil

**FINA1002 Introduction to Finance** \* (6 credits)

An introduction to finance with emphasis on the decisions and issues faced by the firm. The course will also cover the interrelated topics of individuals choosing between different investment alternatives, and the functioning of capital markets in equating the supply and demand of capital. Specific areas covered include: the basics of valuation using discounted cash flows, valuation of stocks and bonds, valuation and choosing between competing projects, risk and return, the cost of the basic paradigms in finance including net present value, the capital asset pricing model and market efficiency.

Prerequisite Nil

\* *It is advisable to take BUSI1002 Introduction to Accounting prior to this course. Not offered by School in 2003-2004.*

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**FINA2802 Investments** (6 credits)

A comprehensive analysis of various investment vehicles and portfolio management techniques. Topics covered: modern portfolio theory and asset pricing models, portfolio management, investment strategies, analysis of common stocks and bonds, and introduction to derivatives securities.

Prerequisite BUSI0016 or FINA1002

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**English****ECEN1801 Academic English for Science Students** \* (3 credits)

English language skills, science concepts and IT skills are integrated through a project-based approach. The aims are:

- (1) to motivate students to use their English; to build confidence in using English in written and spoken forms; to highlight problem areas; to point to sources of information; to recommend improvement through the use of English language skills rather than mastery of a corpus of rules;
- (2) to develop students' writing and speaking skills through short articles and oral presentations, concentrating on description, definition, explanation and summary-writing;
- (3) to develop understanding of scientific concepts and their clear expression in English by synthesis, analysis and problem-solving.

Prerequisite Nil

\* *This course is compulsory for all B.Sc. students.*

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**ECEN2802 Advanced Academic English for Science Students** \* (3 credits)

The course integrates English language skills, science concepts and IT skills through the development of a portfolio of work. It concentrates on effective written and oral skills through project work. The aims are:

- (1) to motivate students to use English; to enable effective communication on scientific topics; to further develop problem-solving skills and IT skills;
- (2) to develop students' English language skills by linking printed materials and IT sources;
- (3) to develop understanding of scientific concepts and their clear expression in English by synthesis, analysis and problem-solving.

Prerequisite ECEN1801

\* *This course is compulsory for all B.Sc. students.*



## Geography

### **GEOG2004 Atmospheric Environment and Global Climate \*** (6 credits)

To provide a basic understanding of the physical and dynamical processes which operate in the atmosphere and how these interact with each other and vary in space and time to produce a distinctive atmospheric environment which results in widely varying climatic conditions at different time and space scales.

Prerequisite Nil

\* *Not offered in 2003-2004.*

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## Mathematics

### **MATH0011 Numbers and Patterns in Nature and Life** (3 credits)

To explore the underlying mathematical structure in various topics in life and environmental sciences. Students from all disciplines will gain appreciation of mathematics as a potent tool for investigating and understanding nature and life.

Prerequisite HKCEE Mathematics

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### **MATH0801 Basic Mathematics I** (6 credits)

To provide students with a basic background of calculus that can be applied in various disciplines, aiming at students not having done much mathematics beyond HKCEE mathematics. It can be followed by MATH0802 / MATH1803 or MATH1811 / MATH1812.

Prerequisite HKCEE Mathematics (HKCEE Additional Mathematics or AS Mathematics and Statistics or Mathematics at higher level not allowed; Mathematics students (MATH, MAEF, CMOR & MAPH) are not allowed to take this course unless prior approval has been obtained from the Department for special reason)

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### **MATH0802 Basic Mathematics II** (6 credits)

To provide students with a more solid background of calculus of one and several variables and of matrices that can be applied in various disciplines, aiming at students having taken an elementary calculus course. It can be followed by MATH1803.

Prerequisite HKCEE Additional Mathematics or AS Mathematics and Statistics or MATH0801 or MATH0803 or MATH0805 (AL Mathematics not allowed; Mathematics students (MATH, MAEF, CMOR & MAPH) are not allowed to take this course unless prior approval has been obtained from the Department for special reason)

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### **MATH1101 Linear Algebra I** (6 credits)

The course is a foundation course for all Mathematics students, to be followed by Linear Algebra II and other more advanced courses in mathematics.

Prerequisite AL Pure Mathematics

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### **MATH1102 Linear Algebra II** (6 credits)

The course is a foundation course for all Mathematics students. It can be followed by other more advanced courses in mathematics.

Prerequisite AL Pure Mathematics and having taken MATH1101

**MATH1201    Calculus I** (6 credits)

The course is a foundation course for all Mathematics students, to be followed by Calculus II and other more advanced courses in mathematics.

Prerequisite    AL Pure Mathematics

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**MATH1202    Calculus II** (6 credits)

The course is a foundation course for all Mathematics students. It can be followed by other more advanced courses in mathematics.

Prerequisite    AL Pure Mathematics and having taken MATH1201

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**MATH1800    Elements of Discrete Mathematics** (6 credits)

To introduce students to the basic ideas and techniques of discrete mathematics.

Prerequisite    AS Mathematics and Statistics, or Mathematics at higher level

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**MATH1803    Basic Mathematics III** (6 credits)

To provide students with a background of calculus of several variables and linear algebra that can be applied in various disciplines.

Prerequisite    AL Pure Mathematics or MATH0802 or MATH0804 or MATH0806 or MATH0808 (Mathematics students (MATH, MAEF, CMOR & MAPH) are not allowed to take this course unless prior approval has been obtained from the Department for special reason)

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**MATH1811    Mathematics I** (6 credits)

To provide students with the essential knowledge of linear algebra and vector calculus for further studies in the physical sciences. It is intended that the course will be followed by MATH1812.

Prerequisite    AS Mathematics and Statistics, or Mathematics at higher level (Mathematics students (MATH, MAEF, CMOR & MAPH) are not allowed to take this course unless prior approval has been obtained from the Department for special reason)

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**MATH1812    Mathematics II** (6 credits)

To provide students with the essential knowledge of linear algebra and vector calculus for further studies in the physical sciences.

Prerequisite    (AS Mathematics and Statistics, or Mathematics at higher level) and having taken MATH1811 or MATH1801 (Mathematics students (MATH, MAEF, CMOR & MAPH) are not allowed to take this course unless prior approval has been obtained from the Department for special reason)

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**MATH2000    Intermediate Mathematics Project** (6 credits)

This course is designed for a second year outstanding student who would like to take an early experience on independent study. It provides the student with the opportunity to do a small mathematics project close to research in nature independently.

Prerequisite    MATH1101, MATH1102, MATH1201, MATH1202  
Co-requisite    MATH2301 and MATH2401

**MATH2001 Development of Mathematical Ideas** (6 credits)

- (1) To acquaint the students with the origin and growth of basic mathematical concepts.
- (2) To assist the students to gain a deeper insight and broader view of mathematics as a discipline and human endeavour.
- (3) To provide the students with an opportunity to write on and talk about mathematics, and to engage in independent study.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202

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**MATH2301 Algebra I** (6 credits)

This course aims to present those fundamental topics and techniques of algebra that are finding wide applications in mathematics and the applied sciences. It is complete in itself, and may also be followed by Algebra II and Topics in Applied Discrete Mathematics.

Prerequisite 1) (Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1102); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

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**MATH2303 Matrix Theory and Its Applications** (6 credits)

Matrix theory has a close connection with other mathematical subjects such as linear algebra, functional analysis, and combinatorics. It also plays an important role in the development of many subjects in science, engineering, and social sciences. In this course, students will be taught the fundamentals of matrix analysis and its application to various kinds of practical problems. Mathematical software will be used in the course, so that students can learn how to use the computer to solve matrix problems.

Prerequisite 1) (MATH1101 and MATH1102); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

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**MATH2304 Introduction to Number Theory** (6 credits)

This course introduces students to the basic knowledge and techniques in number theory. It is hoped that it will stimulate interested students to delve into the rich literature associated with this historically important subject of mathematics.

Prerequisite MATH1101 and MATH1201  
Co-requisite MATH2301

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**MATH2401 Analysis I** (6 credits)

This course extends to more general situations some of the results covered in the first year Mathematics courses, and introduces some further basic concepts which are essential for more advanced studies in mathematical analysis.

Prerequisite 1) (MATH1201 and MATH1202); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

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**MATH2402 Analysis II** (6 credits)

This course gives a modern treatment of calculus in several variables which is essential for more advanced studies in analysis.

Prerequisite 1) (MATH1201 and MATH1202) and (MATH1101 or MATH1102); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

**MATH2403 Functions of a Complex Variable** (6 credits)

This course is indispensable for studies in higher mathematical analysis and the more theoretical aspects of physics. In this course, the students are introduced to the fundamental concepts and properties of analytic functions and are shown how to look at analyticity from different points of view. At the same time, the techniques of solving problems without losing sight of the geometric picture are emphasized.

Prerequisite 1) (Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1201 or MATH1202); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

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**MATH2405 Differential Equations** (6 credits)

The standard topics in the wide field of differential equations included in this course are of importance to students of mathematics and physical sciences as well. Our emphasis is on principles rather than routine calculations and our approach is a compromise between diversity and depth.

Prerequisite 1) (Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1201 or MATH1202); or 2) (MATH1811/MATH1812 or MATH1803); or 3) (MATH1801/MATH1802 or MATH1807)

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**MATH2407 Mathematical Methods for Physicists \*** (6 credits)

This course is designed for students in Physics and other science subjects.

Prerequisite MATH1811 or MATH1812 or MATH1801 or MATH1802

\* *This course is not open to students who have taken MATH1101, MATH1102, MATH1201 and MATH1202.*

*Not offered in 2003-2004.*

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**MATH2601 Numerical Analysis** (6 credits)

This course covers both the theoretical and practical aspects of Numerical Analysis. Emphasis will be on basic principles and practical methods of solution, using high speed computers.

Prerequisite 1) (Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1201 or MATH1202) or (MATH1811/MATH1812 or MATH1803) or (MATH1801/MATH1802 or MATH1807); and 2) Knowledge of a programming language

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**MATH2603 Probability Theory** (6 credits)

The emphasis of this course will be on probability models and their applications. The primary aim is to elucidate the fundamental principles of probability theory through examples and to develop the ability of the students to apply what they have learned from this course to widely divergent concrete problems.

Prerequisite 1) MATH1201 and MATH1202; or 2) MATH1811 and MATH1812; or 3) MATH1803; or 4) MATH0801 and MATH0802

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**MATH2901 Operations Research I** (6 credits)

The objective is to provide a fundamental account of the basic results and techniques of Linear Programming and its related topics in Operations Research. There is an equal emphasis on all three aspects of understanding, algorithms and applications. The course serves, together with a course on network models, as essential concept and background for more advanced studies in Operations Research.

Prerequisite Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1101 or MATH1102

**MATH2904 Introduction to Optimization** (6 credits)

This course introduces students to the theory and techniques of optimization, aiming at preparing them for further studies in Operations Research, Mathematical Economics and related subject areas.

Prerequisite (MATH1101 or MATH1102) and (MATH1201 or MATH1202)

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**MATH2905 Queueing Theory and Simulation** (6 credits)

This course introduces students to the models and theory of queueing system, as well as the technique of simulation as a practical tool of analysis.

Prerequisite STAT1007 and (MATH1101 or MATH1102) and (MATH1201 or MATH1202)  
Co-requisite MATH2603

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**MATH2906 Financial Calculus** (6 credits)

This course gives an elementary treatment of the modeling of financial derivatives, asset pricing and market risks from an applied mathematician's viewpoint. Stochastic calculus and numerical methods will be introduced.

Prerequisite STAT1007 and (MATH1101 or MATH1102) and (MATH1201 or MATH1202)  
Co-requisite MATH2603

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**MATH3000 Mathematics Project** (6 credits)

The object is to provide a student with an opportunity to formulate and investigate, in depth, a problem of practical interest and/or have a foretaste of mathematical research. The work, to be done on an individual basis, is considered a highly desirable part of the training of a mathematician.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2301 and MATH2401

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**MATH3302 Algebra II** (6 credits)

This course is an extension of Algebra I and goes deeper into the various topics treated in that course. Together, the two courses are complete in themselves, and may be followed by Topics in Algebra and Topics in Applied Discrete Mathematics.

Prerequisite MATH2301

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**MATH3310 Topics in Algebra \*** (6 credits)

To provide students specializing in mathematics with the opportunity to study some topics in algebra in greater depth.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2301

\* *Not offered in 2003-2004.*

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**MATH3404 Functional Analysis** (6 credits)

This course introduces students to the basic knowledge of linear functional analysis, an important branch of modern analysis.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2401

**MATH3406 Introduction to Partial Differential Equations** \* (6 credits)

This course introduces students to the basic techniques for solving partial differential equations as well as the underlying theories.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2401  
Co-requisite MATH2405

\* *Not offered in 2003-2004.*

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**MATH3501 Geometry** (6 credits)

As geometric forms often appear in nature, the study of geometry helps us to understand better the universe in which we live. Moreover, geometry has much intrinsic beauty and the study of it is an excellent training in intuitive thinking. In this course we study the differential geometry of curves and surfaces in 3-space. In the study of regular surfaces in 3-space we exhibit geometric notions that are definable in terms of metrical properties of these surfaces alone, leading to the intrinsic geometry of surfaces.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2401

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**MATH3502 Geometric Topology** (6 credits)

This course gives a geometric introduction to some of the methods of algebraic topology. The emphasis throughout will be on the geometric motivations and applications of the theory.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202 and MATH2301 and MATH2401

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**MATH3602 Scientific Computing** (6 credits)

This course introduces mathematical theories and computational techniques for solving various kinds of matrix computation problems that are often encountered in scientific or industrial applications.

Prerequisite MATH1101 and MATH1102 and MATH1201 and MATH1202  
Co-requisite MATH2601

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**MATH3610 Topics in Applied Discrete Mathematics** (6 credits)

To provide students with the opportunity to study some further topics in applied discrete mathematics.

Prerequisite MATH1800 and MATH2301

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**MATH3902 Operations Research II** (6 credits)

The objective is to provide a fundamental account of the basic results and techniques of Integer Programming (IP), Dynamic Programming (DP) and Markov Decision Processes (MDP) in Operations Research. There is emphasis on aspects of algorithms as well as applications. The course serves, together with courses on linear programming and network models, to provide essential optimization concept and algorithms for more advanced studies in Operations Research.

Prerequisite Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1101 or MATH1102  
Co-requisite MATH2901

**MATH3903 Network Models in Operations Research (6 credits)**

The objective is to provide a fundamental account of the basic results and techniques of network models in Operations Research. There is an equal emphasis on all three aspects of understanding, algorithms and applications. The course serves, together with a course on linear programming, to provide essential concept and background for more advanced studies in Operations Research.

Prerequisite Two out of MATH1101, MATH1102, MATH1201, MATH1202, one of which should be MATH1101 or MATH1102

Co-requisite MATH2901

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**MATH3910 Topics in Mathematical Programming & Optimization \* (6 credits)**

A study in greater depth of some special topics in mathematical programming or optimization. It is mainly intended for students in Operations Research or related subject areas.

Prerequisite MATH2901 and MATH2904

\* *Not offered in 2003-2004.*

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**Philosophy****PHIL2130 Philosophy of the Sciences (6 credits)**

If we want to find out about the world around us, we look to science to provide the answers to our questions. But why? What justifies our faith in this enterprise? In this course, we shall investigate two related questions. First, what is scientific method? We shall examine answers ranging from the rigid prescriptions of Popper to the anarchism of Feyerabend. Second, what reason do we have to think that the explanations provided by science are true? Here the answers range from optimism based on the success of science, to pessimism based on our repeated rejection of past theories. Along the way, we shall critically consider notions such as progress, objectivity, and the difference between science and non-science.

We shall examine how philosophical questions arise in actual scientific practice. What examples are selected for this purpose will, to some extent, be determined by the interests of students.

Prerequisite This is a second or third level course. There are no prerequisites: it is open as a "broadening course" to any second or third year student in the University. The course is normally given every year.

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**Physics****PHYS0001 Nature of the Universe I: Introduction to Observational Astronomy and the Solar System \* (3 credits)**

This general education course is designed as an elective for students in all disciplines and all years. No prior knowledge in astronomy, physics, and higher mathematics is required.

Prerequisite Nil

\* *Not available to those who have taken PHYS0003 or YSCN0009 unless approved by course coordinator.*

**PHYS0002 Nature of the Universe II: Stars, Galaxies and Cosmology for Beginners \***  
(3 credits)

This general education course is designed as an elective for students in all disciplines and all years. It focuses on the theoretical aspect of astronomy. No prior knowledge in astronomy, physics, or higher mathematics is required.

Prerequisite Nil

*\* Not available to students who have taken YSCN0003 or PHYS0003 unless approved by course coordinator.*

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**PHYS0111 Introduction to Physics \*** (6 credits)

This course serves as a bridging course for students without AL physics, contents covering Mechanics, Electricity and magnetism and some selected basic topics in modern physics. It is designed to standardize the physics background for the students with different physics levels.

Prerequisite HKCEE Physics

*\* Not offered in 2003-2004.*

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**PHYS0601 God, the Big Bang and Stephen Hawking I** (3 credits)

This course, named after a recently published book by David Wilkinson, is for both science and non-science students to recognize the absence of any real conflict between science and religion. This course (part I) deals with religion and its interactions with cosmology.

Prerequisite Nil

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**PHYS0602 Science or Fiction?** (3 credits)

The course is designed as an exploration of the various way in which science, particularly physics, has been used in the creation of the literary genre known as science fiction. One of its main purposes is to provide students with experience in expressing their ideas and opinions in written and spoken form and in developing their analytical and creative powers.

Prerequisite Nil

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**PHYS0603 Art & Physics** (3 credits)

The course is aimed at artistically inclined students who would like to know more about the New Physics, scientifically inclined students who would like to have a framework to appreciate Art, and anyone who is fascinated by both.

Prerequisite Nil

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**PHYS0605 Nuclear Energy and the Environment** (3 credits)

To introduce the use of nuclear power and its impact to our environment; and to arouse an awareness of the safety use of nuclear energy.

Prerequisite Nil



**PHYS1111 Introduction to Mechanics** \* (6 credits)

This course aims at providing students a solid foundation in Newtonian mechanics with the treatment of calculus. Students are expected to have basic knowledge of calculus and vectors.

Prerequisite 1) HKCEE Additional Mathematics or AS Mathematics & Statistics or AL Pure Mathematics; and 2) AL/AS Physics or Engineering Science

\* *Not available to those who have passed PHYS0111 or PHYS1312 unless approved by course coordinator.*

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**PHYS1112 Electricity and Magnetism** \* (6 credits)

This course aims at introducing the basic physics of electromagnetism.

Prerequisite 1) HKCEE Additional Mathematics or AS Mathematics & Statistics or AL Pure Mathematics; and 2) AL/AS Physics or Engineering Science

\* *Not available to those who have passed PHYS0111 or PHYS1312 or PHYS2321 unless approved by course coordinator.*

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**PHYS1113 Heat, Light and Waves** \* (6 credits)

To appreciate the underlying physical principles of heat, thermodynamics, waves and related physics. This course is designed to prepare the students with basic knowledge for the more advanced courses in the department.

Prerequisite 1) HKCEE Additional Mathematics or AS Mathematics & Statistics or AL Pure Mathematics; and 2) AL/AS Physics or Engineering Science

\* *Not available to those who have passed PHYS0111 or PHYS1312 unless approved by course coordinator.*

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**PHYS1303 Special Relativity I** (3 credits)

This course is designed as an elective for students in all disciplines and all years with science background.

Prerequisite 1) AL Physics; and 2) AL Pure Mathematics or AS Mathematics & Statistics or (MATH1811 and MATH1812)

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**PHYS1313 Methods in Physics A** \* (9 credits)

A course designed for providing students with experience in using mathematical tools and numerical techniques to solve problems in physics.

Prerequisite AL Pure Mathematics or AS Mathematics & Statistics

\* *Not available to students who have taken / are taking MATH1811 or MATH1812 unless approved by course coordinator.*

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**PHYS1314 Modern Physics** (6 credits)

This course is designed to provide students with a comprehensive introduction to the concepts and ideas that form the basis of "modern physics" - a term used to describe the revolutionary developments that took place in physics during the 20th-century and are continuing today. The emphasis is on conceptual ideas, rather than technical detail.

Prerequisite AL Physics or PHYS0111 or PHYS1111

**PHYS1411    Introductory Experimental Physics \* (6 credits)**

An experimental course designed to provide students with experience in laboratory techniques and instrumentations.

Prerequisite    AL/AS Physics or AL Engineering Science

\* *Not available to those who have taken PHYS0411 unless approved by course coordinator.*

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**PHYS1412    Electronics (6 credits)**

This course is designed to provide students with a broad knowledge of the theoretical background and experimental application of modern electronic devices and circuitry.

Prerequisite    AL Physics or PHYS0111 or PHYS1112

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**PHYS1606    Introductory Meteorology (3 credits)**

To introduce the phenomena and mechanisms of the atmosphere, including typhoons, tornadoes, El Nino and La Nina. This course is designed to be a non-mathematical exposition of weather and climate. It is suitable for any students with some minimum background in physics or science.

Prerequisite    AL/AS Physics or Engineering Science

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**PHYS2021    The Physical Universe (6 credits)**

To appreciate the underlying physical principles of astronomy. This course is designed as an elective for second or third year students with some basic science knowledge.

Prerequisite    1) AL Physics; and 2) AL Pure Mathematics or MATH1812

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**PHYS2022    Observational Astronomy \* (6 credits)**

To introduce the students to the techniques and methods of contemporary astronomy, with emphasis on the data reduction and analysis.

Prerequisite    Any 1<sup>st</sup> year science or engineering course

\* *Preference to take this course will be given to students in the Physics and Astronomy theme.*

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**PHYS2023    Stellar Physics (6 credits)**

This course introduces the basic theory of stellar structure and evolution. It follows a mathematical treatment that stress on the underlying physical processes. This course is calculus-based and requires a good background in first year level classical mechanics and electromagnetism.

Prerequisite    PHYS1111

Co-requisite    PHYS1112, PHYS1314, PHYS2021 and PHYS2322

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**PHYS2221    Introductory Solid State Physics (6 credits)**

To provides a broad introduction to modern theories of the behaviour and properties of the solid state of matter. It is designed as a self-contained course which at the same time will serve as a basis for more advanced courses and projects in solid state physics.

Prerequisite    PHYS1111, PHYS1112 and PHYS1113

Co-requisite    PHYS1113

**PHYS2222 Waves and Optics (6 credits)**

To give a coherent introduction to the development of modern physical optics, with particular attention to the wave properties and quantum theories of light.

Prerequisite PHYS1111, PHYS1112 and PHYS1113

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**PHYS2223 Data Analysis of Physical Systems \* (6 credits)**

The aim of this course is to introduce students to various computational methods and techniques in handling data obtained either from physics experiments or from physical models.

Prerequisite CSIS0911 and PHYS1113 and PHYS1112 and PHYS1314

\* *Not offered in 2003-2004.*

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**PHYS2224 Computational Modelling of Physical Systems (6 credits)**

The aim of this course is to introduce the students to handling data (obtained either from physics experiments or physical models) and computational methods for modelling physical systems.

Prerequisite CSIS0911 and PHYS1113 and PHYS1112 and PHYS1314

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**PHYS2225 Solid State Devices (6 credits)**

The aim of this course is to give an introduction to the physics and operating principles of commonly used solid state devices.

Prerequisite PHYS1314

Co-requisite PHYS2221

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**PHYS2226 Animation in Science (6 credits)**

The understanding of the essence of physical concepts as well as their presentations are equally important in teaching and learning physical concepts. This course is designed to make use of new tools in multi-media communication software to simulate physical processes and scientific phenomena. Students are expected to present their work through innovative and impressive graphical simulations.

Prerequisite Any 1<sup>st</sup> year science or engineering course

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**PHYS2227 Laser Spectroscopy (6 credits)**

The aim of this course is to provide a broad introduction to modern laser spectroscopic techniques and selected applications.

Prerequisite PHYS1314 and PHYS2222 and PHYS2323

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**PHYS2228 Introductory Health Physics (6 credits)**

This course aims at providing students with basic knowledge in the scientific and engineering aspects of health physics and to arouse students' interest in the area of peaceful application of ionizing and non-ionizing radiations.

Prerequisite PHYS0605 or PHYS2321 or PHYS3321

**PHYS2229 Thin Film Physics (6 credits)**

This course is intended for the advanced students, covering the basic theories and techniques of physical deposition processes and topics related to a very rapidly growing area - thin film application in material science.

Prerequisite    PHYS1111

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**PHYS2304 Special Relativity II \* (3 credits)**

This is a follow up course of Relativity I, with the aim of providing an introduction to the advanced aspects of the theory of special relativity and of its applications.

Prerequisite    PHYS1303

\* *Not offered in 2003-2004.*

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**PHYS2321 Introductory Electromagnetism (6 credits)**

Introduces the physical concepts required for an understanding of electricity and magnetism. A foundation course for students majoring in physics.

Prerequisite    PHYS1111, PHYS1112 and PHYS1314

Co-requisite    PHYS1113

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**PHYS2322 Statistical Mechanics and Thermodynamics (6 credits)**

An introduction to Statistical Mechanics and elementary Thermodynamics with reference to related phenomena in Physics. This course is taught as a basic and essential subject for students majoring in Physics.

Prerequisite    PHYS1111, PHYS1112 and PHYS1314

Co-requisite    PHYS1113

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**PHYS2323 Introductory Quantum Mechanics (6 credits)**

This course aims at a rigorous introduction to the concepts and methods of non-relativistic quantum mechanics. It is a prerequisite for several advanced physics courses.

Prerequisite    PHYS1111, PHYS1112 and PHYS1314

Co-requisite    PHYS1113

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**PHYS2324 Classical Mechanics (6 credits)**

The aim of this course is to introduce general methods of studying the dynamics of particle systems, through which students can acquire experience in using mathematical techniques for solving practical problems.

Prerequisite    PHYS1111, PHYS1112 and PHYS1314

Co-requisite    PHYS1113

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**PHYS2325 Theoretical Physics (6 credits)**

The aim of this course is to provide students with the conceptual skills and analytical tools necessary for solving real problems in all major areas of physics.

Prerequisite    PHYS1111, PHYS1112, MATH1811 and MATH1812

**PHYS2426 Intermediate Experimental Physics** \* (6 credits)

This laboratory based course aims to familiarize students with some basic methods in physics experimentation, and in particular to illustrate the methods by carrying experiments related to electromagnetism and modern physics.

Prerequisite PHYS0411/PHYS1411 and PHYS1314

\* *Not available to those who have taken PHYS2421 or PHYS2422 unless approved by course coordinator.*

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**PHYS2521 Intermediate Physics Project** (6 credits)

This course is designed for second year students who would like to take an early experience on research. It provides students with the opportunity to do small physics projects by themselves, either theoretical or experimental. These projects are close to research in nature and, usually, without lectures..

Prerequisite Any 1<sup>st</sup> year Physics course

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**PHYS2622 Science and Society** (6 credits)

The course is designed as an exploration of the ways in which science and human society have developed and interacted throughout history up to the present time. One of its main purposes is to provide students with experience in expressing their ideas and opinions in written and spoken form.

Prerequisite Any 1<sup>st</sup> year university course

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**PHYS3031 Astrophysics** (6 credits)

To introduce students to current theories in astrophysics. It may be taken as a self-contained course or as background to research work in astrophysics.

Prerequisite 1) PHYS2421 or PHYS2422 or PHYS2426; and 2) PHYS2321 and PHYS2322 and PHYS2323

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**PHYS3032 Astroparticle Physics** \* (6 credits)

This course intends to introduce topics in the overlapping fields of Astronomy and Astrophysics, Cosmology and Particle Physics.

Prerequisite PHYS2321 and PHYS2322 and PHYS2323

\* *Not offered in 2003-2004.*

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**PHYS3033 General Relativity** (6 credits)

To introduce students to the field of general relativity and to provide conceptual skills and analytical tools necessary for astrophysical and cosmological applications of the theory.

Prerequisite 1) PHYS2421 or PHYS2422 or PHYS2426; and 2) PHYS2321 and PHYS2322 and PHYS2323

Co-requisite PHYS1303

**PHYS3034    Cosmology** \* (6 credits)

The aim of the course is to offer an introduction to the key ideas in cosmology, to familiarize students with the basic approaches used to model the evolution and dynamics of the universe, and to provide an up to date discussion of the big bang theory and structure and galaxy formation.

Prerequisite    1) PHYS2421 or PHYS2422 or PHYS2426; and 2) PHYS2321 and PHYS2322 and PHYS2323

\* *Not offered in 2003-2004.*

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**PHYS3231    Computational Physics** (6 credits)

The aim of the course is to show how the power of computers enables a computational approach to solving physics problems to be adopted, which is distinct from, and complimentary to, traditional experimental and theoretical approaches. The material covered will be found useful in any project or problem solving work that contains a strong computational or data analysis element.

Prerequisite    PHYS2321 and PHYS2322 and PHYS2323

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**PHYS3232    Solid State Physics** (6 credits)

To provide students with an understanding of more advanced topics in selected areas of solid state physics.

Prerequisite    PHYS2221 and PHYS2321 and PHYS2322 and PHYS2323

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**PHYS3233    Many-body Theory** (6 credits)

This course provides an introduction to advanced techniques of theoretical condensed matter physics.

Prerequisite    PHYS2321 and PHYS2322 and PHYS2323

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**PHYS3321    Nuclear and Particle Physics** \* (6 credits)

The aim of the course is to describe nuclear structure in an elementary way as a field of application of quantum mechanics and electromagnetism, and to study the fundamental interactions of subnuclear particles.

Prerequisite    PHYS2323 and PHYS2321 and PHYS2322

\* *Not available to those who have taken PHYS2326 unless approved by course coordinator.*

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**PHYS3331    Electromagnetic Field Theory** (6 credits)

This is a standard course in electromagnetic field theory which provides essential background for students who intend to do research in physics.

Prerequisite    PHYS2321 and PHYS2322 and PHYS2323 and PHYS2325

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**PHYS3332    Quantum Mechanics** (6 credits)

Introduces students to advanced techniques in quantum mechanics and their applications to several selected topics in condensed matter physics.

Prerequisite    PHYS2321 and PHYS2322 and PHYS2323 and PHYS2325

**PHYS3333    Advanced Statistical Mechanics** (6 credits)

This course intends to introduce some topics in the field of equilibrium statistical physics.

Prerequisite    PHYS2321 and PHYS2322 and PHYS2323

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**PHYS3431    Advanced Experimental Physics \*** (6 credits)

This course aims to introduce the student to some of the more advanced techniques in modern physics, while at the same time illustrating some of the important experiments discussed in course text books.

Prerequisite    1) PHYS2421 or PHYS2422 or PHYS2426; and 2) PHYS2321 and PHYS2322 and PHYS2323

*\* Not available to those who have taken PHYS2423 unless approved by course coordinator.*

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**PHYS3531    Physics Project** (12 credits)

This course is designed for students who are considering doing research in the future. It provides students with the opportunity to study special physics projects by themselves, either theoretical or experimental. These projects are close to research in nature and are designed for prospective research students.

Prerequisite    1) PHYS2321; and 2) PHYS2323

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**PHYS3532    Special Topics in Physics** (12 credits)

To provide the chance for students to learn special topics in modern physics by themselves by reviewing literature (theoretical project) or practicing special experimental skills in carrying out a small project (experimental project) under the supervision of a member of staff.

Prerequisite    1) PHYS2321; and 2) PHYS2323

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**Science Faculty****SCNC1001    Science: Concepts & Notions \*** (6 credits)

To provide an introduction to scientific method, thought and concepts: to illustrate the different approaches taken within sub-disciplines to the investigation of major scientific problems and concepts.

Prerequisite    1 AL science subject

*\* This course is compulsory for all BSc students.*

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**SCNC2002    Science and the New Millennium \*** (6 credits)

To provide a coherent picture of modern Science by highlighting the course with topics of significant importance and with relevance to our daily life, in order for students to appreciate the importance of such significant scientific developments.

To generate a strong and intense interest in Science (life long learning) by widening the scope of the science horizon of each undergraduate in the Faculty.

To develop skills in communicating Science to laymen through posters and oral presentations.

Prerequisite    SCNC1001

*\* This course is compulsory for all BSc students.*

**Statistics & Actuarial Science****STAT0105 Quality Control and Management (6 credits)**

The successful control of quality in production is a matter of primary importance to a company's prosperity and goodwill. This course provides an overview of the problems involved in satisfying both the producer and the consumer, and presents a variety of appropriate statistical and management solutions. The student is brought to the frontier of today's quality control and management.

Prerequisite STAT0100 or STAT2802 or STAT0604 or STAT0605

Co-requisite STAT0100 or STAT2802 or STAT0604 or STAT0605

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**STAT0107 Statistics in Clinical Medicine and Bio-medical Research (6 credits)**

In clinical medicine doctors observe features (such as blood pressure, hormone level, presence/absence of a symptom, degree of infection, etc.) which are subject to natural variation between individual patients and between groups of patients with different disease types. This variability motivates the application of statistical methodology to the clinical observational and decision-making process. Part of the course deals with these applications.

The other part deals with statistical problems which come from biological and medical research, for example the controlled clinical drug trial. NO knowledge in biology or medicine is assumed; the course provides all of the necessary bio-medical background when the statistical problems are introduced.

Prerequisite STAT0100 or STAT2802 or STAT0604 or STAT0605

Co-requisite STAT0100 or STAT2802 or STAT0604 or STAT0605

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**STAT0109 The Statistics of Investment Risk (6 credits)**

Most investments involve some risk. The decision to invest or not is usually made against a background of uncertainty. Whilst prediction of the future is difficult, there are statistical modelling techniques which provide a rational framework for investment decisions, particularly those relating to the stock markets and the markets for interest rates, commodities and currencies. Building upon research, both in Hong Kong and abroad, this course presents the prevailing statistical theories for prices and price-change in these vital markets.

Prerequisite STAT0100 or STAT2802 or STAT0604 or STAT0605. Students taking or having taken STAT00806 are not allowed to take this course.

Co-requisite STAT0100 or STAT2802 or STAT0604 or STAT0605. Students taking or having taken STAT00806 are not allowed to take this course.

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**STAT0110 Applied Non-parametric Methods (6 credits)**

Many statistical procedures can be performed by simple calculations, even when distributional assumptions inherent in statistical models are unacceptable. The course aims to explore the field of non-parametric statistics from a methodological viewpoint.

Prerequisite STAT0100 or STAT2802 or STAT0604 or STAT0605

Co-requisite STAT0100 or STAT2802 or STAT0604 or STAT0605



**STAT0601 Statistical Methods in the Physical Sciences** (6 credits)

Although the physical sciences are often regarded in terms of deterministic mechanisms there are many natural phenomena and experiments which are subject to uncertainty and variability. Statistics is concerned with the description and analysis of situations where uncertainty and variability play a significant role. This course presents basic concepts and methods against a variety of motivating examples from the physical sciences and develops statistical models as the tool for investigating such phenomena and experiments.

Prerequisite AL Pure Mathematics or AS Mathematics & Statistics. Students taking or having taken STAT0602 or STAT0100 or STAT1001 or STAT1003 or STAT1006 or STAT1007 or STAT1008 are not allowed to take this course.

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**STAT0602 Statistics in Biology and Biochemistry** \* (6 credits)

This course provides a basic training in statistics for Biology students who have not taken STAT1006 in their first year and for Chemistry\* students without A-level mathematics. The discipline of statistics is concerned with the description and analysis of uncertainty and variability. This course develops the basic concepts and methods of statistics through the challenge of motivating examples in biology and biochemistry, without recourse to technical mathematics.

Prerequisite Not available to students with a pass in AL Pure Mathematics. Students taking or having taken STAT0601 or STAT0100 or STAT1001 or STAT1003 or STAT1006 or STAT1007 or STAT1008 or STAT1801 are not allowed to take this course.

\* *This course is not available to Chemistry students with AL Mathematics. Chemistry students with AL Mathematics should consider STAT0601 Statistical Methods in the Physical Sciences.*

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**STAT0603 Statistical Analysis of Experimental Data** (6 credits)

A wide range of statistical analysis is presented using data sets generated from scientific studies. These analyses deal with designed experiments in the laboratory or field-work setting together with data from less-rigorously planned observational studies. Simple principles of experimental design are presented. Although no knowledge of a programming language is required, the course makes extensive use of computers. This is made possible by high-quality, but user friendly statistical software.

Prerequisite STAT0602 or STAT1001 or STAT1003 or STAT1006 or STAT1008 or STAT2001 or ECOL2006 or ECON1003. Students taking or having taken STAT0401 are not allowed to take this course.

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**STAT0604 Statistical Modelling** (12 credits)

The purpose of this course is to develop an ability to face up to practical problems involving uncertainty and variability and to find solutions through the discipline of statistical inference and modelling. The approach is applied mathematical in its use of actual problems to motivate the introduction of concepts, principles and techniques. Emphasis is on model formulation, fitting of models and on clear interpretation of statistical analyses with the aid of computer software. Students will gain experience in approaching standard as well as non-standard problems with confidence.

Prerequisite STAT0601 or STAT1001 or STAT1007. Students taking or having taken STAT0100 or STAT0102 or STAT0605 or STAT0801 or STAT2802 are not allowed to take this course.

**STAT0605 Mathematical Statistics (6 credits)**

This course develops further the language of probability, random variables and statistical modelling. Statistical theory is presented with connection to practical problems. The approach is applied mathematical in its use of actual problems to motivate the introduction of statistical concepts, principles and techniques.

Prerequisite STAT0601 or STAT1000 or STAT1007. Students taking or having taken STAT0100 or STAT0604 or STAT2802 are not allowed to take this course.

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**STAT1001 Elementary Statistical Methods (6 credits)**

The discipline of statistics is concerned with situations involving uncertainty and variability. Variability greatly affects the interpretation of data. Thus statistics forms an important descriptive and analytical tool. This elementary course, which is taught without any technical mathematics, presents many standard situations of data interpretation. The statistical tests for these situations are presented.

Prerequisite Not available to students with a pass in AL Pure Mathematics. Students who have taken MATH0802 or have AS Mathematics & Statistics are eligible for this course, but are advised that STAT1003 may be a more suitable choice. Students taking or having taken STAT1000 or STAT1003 or STAT1006 or STAT1007 or STAT1008 or STAT1801 or STAT0601 or STAT0602 are not allowed to take this course.

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**STAT1003 Introductory Statistics (6 credits)**

The discipline of statistics is concerned with situations involving uncertainty and variability. The interpretation of data is greatly affected when variability plays a role, as it usually does. Thus statistics forms an important descriptive and analytical tool. Candidates with a mathematical background will find this course suitable, because the language of mathematics allows the subject of statistics to be presented with economy and clarity.

Prerequisite Either AL Pure Mathematics or AS Mathematics & Statistics or MATH0801 or MATH0802 or MATH0901 or MATH0902. Students without these qualifications, but with grade C or better in AL Physics, are deemed to have sufficient mathematical training to enrol in this course. Students who intent to major in either one of the 2 themes: "Risk Management" and "Statistics" should take STAT1000 or STAT1007 or STAT0601 instead of this course. Students taking or having taken STAT1000 or STAT1001 or STAT1006 or STAT1007 or STAT1008 or STAT1801 or STAT0601 or STAT0602 are not allowed to take this course.

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**STAT1006 Statistics for Biology (6 credits)**

Genetic diversity has led to a world where animals and plants vary greatly. Even within a species, there is a great variability in genetic composition and phenotypic expression. The response to experimentation of animals, plants, cells and even molecules varies greatly. Statistics is the science of understanding variability. It provides a language for the description of variability and deals with issues such as the design/analysis of experiments, testing of scientific theories and the modelling of biological systems. This course is an introduction to statistical concepts, taught without mathematical technicalities.

Prerequisite Not available to students with a pass in AL Pure Mathematics. Students taking or having taken STAT0601 or STAT0602 or STAT1000 or STAT1001 or STAT1003 or STAT1007 or STAT1008 or STAT1801 are not allowed to take this course.

**STAT1007 Applied Mathematics S (6 credits)**

The discipline of statistics is concerned with situations in which uncertainty and variability play an essential role and so forms an important descriptive and analytical tool in many practical problems. Against a background of motivating problems this course develops relevant probability models for the description of such uncertainty and variability and provides introduction to the concepts, principles and methodology of statistical inference.

Prerequisite AL Pure Mathematics or AS Mathematics & Statistics. Students taking or having taken STAT0601 or STAT0602 or STAT1000 or STAT1001 or STAT1003 or STAT1006 or STAT1008 or STAT1801 are not allowed to take this course.

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**STAT3101 Time-series Analysis (6 credits)**

A time series process consists of a set of observations on a random variable taken over time. Such processes arise naturally in climatology, economics, environment and many other disciplines. In addition to statistical modelling, prediction of the future behaviour of these time series gives rise to important problems in time series analysis. This course distinguishes different type of time series, investigates various linear or non-linear representations for the processes and studies in the relative merits of different forecasting procedures.

Prerequisite STAT0102 or STAT0604. Students taking or having taken STAT0801 are not allowed to take this course.

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**STAT3102 Multivariate Statistical Analysis (6 credits)**

In many disciplines the basic data on an experimental unit consist of a vector of possibly correlated measurements, such as the major oxide composition of a rock, the results of clinical observations and tests on a patient, the expenditures of a household on different commodities. Through the challenge of problems in a number of fields of application this course considers appropriate statistical models for explaining the patterns of variability of such multivariate data and develops statistical tools of analysis and their computer implementation.

Prerequisite STAT0102 or STAT0604 or STAT0801

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**STAT3106 Selected Topics in Statistics (6 credits)**

This course covers a range of topics necessary for work as a professional statistician. Statistical problems can be of many types. Whilst the statistician will face many non-standard situations, he/she is aided by well-developed theories and methods which bring many problems into a standard framework. This course presents such theory and methods.

Prerequisite STAT0102 or STAT0801 or STAT0604

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**STAT3601 Statistical Data Analysis (6 credits)**

This is a computer-oriented course of statistical analysis. Numerous real data sets will be presented for analysis using existing statistical packages. The underlying theory of each analysis will be addressed. The course aims to develop skills of model selection and testing so that the questions of interest can be properly formulated and answered. An important element deals with model review and improvement, when one's first attempt does not adequately fit the data. Modern computer packages make this "interactive data analysis" possible.

Prerequisite STAT0604 or STAT0102 or STAT0801. Students taking or having taken STAT0111 are not allowed to take this course.

**Zoology****BIOL0118 Bioethics** (6 credits)

The aim is to explore the ethical implications of the latest major advances in biology and medicine.

Prerequisite Nil

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**BIOL2201 Neuroscience** \* (6 credits)

To provide a comprehensive picture of how the nervous system and neurones work in animals both as sensory input, integrator, motor output, and for learning, memory and behavioural patterns.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

\* *Not offered in 2003-2004.*

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**BIOL2202 General Parasitology** (6 credits)

To provide the student with a broad basic knowledge on various aspects of disease transmissions and reactions of the host against infectious agents. The course is intended to provide training for future scientists, biology teachers, and workers in public health, meat in inspection, food laboratory, diagnostic laboratory; immunodiagnosis marketing and biotechnology.

Prerequisite BIOL1101 or BIOL1102 or BIOL1103

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**BIOL2203 Reproduction** (6 credits)

To provide students with the basic knowledge on various aspects of reproductive biology. Basic concepts on evolution of sex, human sexuality & sexual behavior, molecular mechanisms for sex determination & differentiation, developmental aspects of gamete formation, neuroendocrinology of reproductive functions, and recent advancements in reproductive biotechnology will be discussed.

Prerequisite BIOC1001 or BIOL1101 or BIOL1102

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**BIOL2205 Basic Immunology** \* (6 credits)

To provide a broad understanding of animal immune systems. Topics will also include the application of a variety of immunological methods to research and disease diagnosis.

Prerequisite BIOC1001 or BIOL1101 or BIOL1102

\* *BIOL2205 Basic Immunology is not available to students taking BIOC2606 Applied Human Biochemistry.*

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**BIOL2207 Endocrinology** (6 credits)

To provide an advanced course on hormones and regulation of metabolism.

Prerequisite BIOC1001 or BIOL1101 or BIOL1102

**BIOL2208     Vertebrate Comparative Anatomy and Palaeontology and Evolution of Man \***  
(6 credits)

This course provides the anatomical background to comprehend the evolutionary and functional adaptations in vertebrate animals through to the evolution of man. The course will examine both the fossil evidence and the comparison of anatomical structures in existing forms. The course is open to Biological Science students, Geology and Earth Science students and welcome others from non-science curricular.

Prerequisite     BIOL1101 or BIOL1102 or BIOL1103

*\* Not offered in 2003-2004.*

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**BIOL2209     Developmental Biology** (6 credits)

The course provides important insights into mechanisms regulating the early stages of animal life and is particularly relevant to the understanding of the functional aspects of body systems.

Prerequisite     BIOL1102 or BIOL1107

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**BIOL2210     Genetics and Evolution \*** (6 credits)

To understand the evolutionary forces that have an impact on levels of genetic variation in plant, animal, and human populations. The course also covers the rapidly expanding molecular approaches for genetic studies of populations.

Prerequisite     BIOL1106

*\* Not offered in 2003-2004.*

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**BIOL2215     Animal Physiology** (6 credits)

To provide a basic course on experimental zoology describing the interactions between animals and the environment. Stress will be given to how living organisms obtain resources (e.g., oxygen & nutrients) from the environment, gather information of environmental changes via sensory structures, and respond to adversities of environmental changes by adjusting their body physiology and biochemistry. (This course serves as an excellent bridging course for BIOL2207, BIOL2203, BIOC3609, ECOL2016 and ECOL3027.)

Prerequisite     BIOC1001 or BIOL1101 or BIOL1102

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**BIOL2314     Intermediate Zoology Project** (6 credits)

This course is to provide research experience in experimental biology to second year students with good academic performance.

Prerequisite     Requires good performance in relevant first year courses

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**BIOL3212     Applied Immunology \*** (6 credits)

A follow-up course of BIOL2205. The aim is to provide the latest knowledge on the practical applications of Immunology in biological research, serodiagnosis and industries.

Prerequisite     BIOL2205

*\* BIOL3212 Applied Immunology is not available to students taking BIOC2606 Applied Human Biochemistry.*

**BIOL3213      Advanced Techniques and Instrumentation in Animal Biology** \* (6 credits)

A follow-up course of BIOL1104. The aim of this course is to introduce students with the latest techniques and instrumentation used in animal biological research.

Prerequisite      1) BIOL1104; and 2) BIOL2303

\* *BIOL3213 Advanced Techniques and Instrumentation in Animal Biology is not available to students taking BIOC3609 Molecular Medicine.*  
*Not offered in 2003-2004.*

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**BIOL3214      General Virology** (6 credits)

This Course provides the fundamental principles of virology so that students can understand the pathogenesis of major viral diseases that affect animal health. The course will prepare students for profession or graduate work in virology, medicine and biotechnology.

Prerequisite      BIOL2303 or BIOL2205 or BIOC2603

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**BIOL3308      Applied Molecular Biology in Mammalian Science** \* (6 credits)

A follow-up course of BIOL2303 or BIOC2603. The aim is to provide the latest knowledge on the practical applications of molecular biology related to the mammalian genomes.

Prerequisite      BIOL2303

\* *BIOL3308 Applied Molecular Biology in Mammalian Science is not available to students taking BIOC3609 Molecular Medicine.*

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**BIOL3310      Zoology Project** (12 credits)

To provide experience of biological research by planning and carrying out a small project under the supervision of a member of staff.

Prerequisite      Requires good performance in relevant level 2 courses

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**BIOL3312      Zoology Dissertation** (6 credits)

Students will undertake a dissertation on an agreed topic in *biological sciences*. The course will enhance the students' overall capability in producing a formal document through emphases on problem identification, content selection, efficient use of IT and library resources, scientific writing and oral presentation skills.

Prerequisite      Requires completion of relevant level 2 courses