REGULATIONS FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE
(BSc[ActuarSc])

These regulations apply to students admitted in the academic year 2004-2005 and thereafter.

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

The degree of Bachelor of Science in Actuarial Science is an undergraduate degree, awarded for the satisfactory completion of a prescribed course of specialist training in actuarial science.

Definitions

AS1[1]   In these Regulations, and in the Syllabuses for the degree of BSc(ActuarSc), unless the context otherwise requires —
'Course' means a course of instruction which normally carries 6 credits or in some cases 3 credits or multiples of 3, leading to one examination paper as defined in the syllabus;
'Paper' means one or more of the following tests: a theoretical examination paper, a practical examination paper, an assessment of field practice, a thesis, and a dissertation, or other assignments as prescribed in the syllabus of the course leading to it;
'Credits' means the weight assigned to each course relative to the total study load. The number of credits is indicative of the contact hours and/or study time associated with the course on a weekly basis;
'Pre-requisite' means a course which candidates must have completed as specified to the satisfaction of the Head of Department before being permitted to take the course in question.

Admission to the degree

AS2   To be eligible for admission to the degree of Bachelor of Science in Actuarial Science candidates shall
    (a)   comply with the General Regulations;
    (b)   comply with the Regulations for First Degree Curricula; and
    (c)   complete the curriculum in accordance with the regulations that follow.

Length of study

AS3   The curriculum shall normally extend over three academic years consisting of six semesters of full-time study, excluding the summer semesters. Candidates shall not in any case be permitted to complete the curriculum in more than four academic years, which being the maximum period of registration.

Completion of the curriculum

AS4   To complete the curriculum, candidates shall:
    (a)   satisfy the requirements prescribed in UG3 of the Regulations for First Degree Curricula[2];

---

[1]   This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.
[2]   The specific requirements applicable to candidates of this degree curriculum are spelt out in the syllabuses.

(b)   enrol in not less than 180 credits of courses, unless otherwise required or permitted under the Regulations;

(c)   follow the required number of compulsory and elective courses as prescribed in the syllabuses of the equivalent of normally 60 credits for each year of study. For each semester, candidates shall select not less than 24 or more than 36 credits of courses, except for the last semester of study;

(d)   take a maximum of 84 credits of introductory level courses and the rest being advanced level courses as prescribed in the syllabuses over the entire period of studies; and

(e)   take not less than 84 credits of advanced level courses from the Department of Statistics and Actuarial Science.

Selection of courses

AS5   Candidates who wish to withdraw from a course at the beginning of each semester may do so up to 2 weeks after the commencement of the semester. Withdrawal beyond the 2-week deadline will not be permitted, except for medical or other reasons acceptable by the Faculty Board, and candidates withdrawal from any course without permission will be given a failed grade.

Assessment and grades

AS6   Candidates should be assessed for each of the courses which they have registered. The assessment may take one or a combination of forms as prescribed in the syllabuses and shall normally include the candidates' coursework during the semester. Only those satisfactorily completed courses will earn credits.

AS7   Candidates' performance in a course shall be assessed with the grading system as prescribed in UG5 of the Regulations for First Degree Curricula.

Failure in examination

AS8   Candidates who fail in any course may, as directed by the Board of Examiners, be permitted to present themselves for re-assessment with or without repeating the failed course. The timing and the form(s) of re-assessment shall be decided by the Board of Examiners. Candidates shall not be allowed to repeat a course for which they have achieved a passed grade for upgrading purposes, nor shall they be permitted to repeat a course more than once. The failed grade will be recorded in the official transcripts. The new grade obtained after re-assessment of the same failed course will also be recorded and will replace the previous F grade in the calculation of the weighted grade point averages. As failed courses shall not be credited towards a degree, failed compulsory courses must be re-assessed.

Absence from examination

AS9   Candidates who are unable because of their illness to be present for any written examinations may apply for permission to present themselves for a supplementary examination to be held before the beginning of the first semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of absence from any examination. Candidates who fail to satisfy the examiners in one or more papers in such a supplementary examination shall be considered under the provisions made in these Regulations for failure at the first attempt at the examination, except that a further supplementary examination shall not be permitted.

Performance assessment

AS10   At the end of each semester, candidates' performance shall be assessed for the purposes of determining
  (f)   their eligibility for progression to an award of the degree;
  (g)   their eligibility for the award; or
  (h)   whether they be required to be discontinued from the programme.

Progression of studies

AS11   Candidates shall be permitted to progress if they have:
  (i)   not exceeded the maximum period of registration; and
  (j)   accumulated not less than 30 credits and attained a GPA of 1.00 or above over the first and second semesters; or
  (k)   accumulated not less than 30 credits and attained a GPA of 1.50 or above over the third and fourth semesters; or
  (l)   accumulated not less than 30 credits and attained a GPA of 1.50 or above over the fifth and sixth semesters; or
  (m)   attained a semester GPA of 1.50 or above at the end of each subsequent semester.
Those who have not been able to fulfill the requirements above shall be recommended for discontinuation from the programme under General Regulation G12.

Award of the degree

AS12   To be eligible for the award of the degree of BSc(ActuarSc), candidates shall have:
  (n)   achieved a weighted GPA of 1.00 or above;
  (o)   successfully accumulated a minimum of 180 credits; and
  (p)   satisfied the requirements in UG3 of the Regulations for First Degree Curricula.

Degree classification

AS13   A list shall be published of candidates successful in the examinations for each semester. A list of candidates who have successfully completed all the degree requirements shall be published in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, Pass. The classification of honours shall be determined by the Board of the Faculty at its full discretion by taking the overall performance of candidates and other relevant factors into consideration.

SYLLABUSES FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE

GENERAL FEATURES

1.   Curriculum requirements

Regulations AS1 to AS4 specify the requirements with which candidates have to comply for completion of the BSc(ActuarSc) degree programme. For the fulfillment of Regulation UG3 "Requirements for Graduation", candidates shall complete successfully the language studies courses and the broadening courses as listed below. Furthermore they should obtain a pass in an Information Technology proficiency test, or successfully complete a 3-credit course in Information Technology.

2.   Course registration

Course registration will take place before the commencement of each semester. All introductory level courses should be taken in the first or second semester except those specified in the syllabuses. In course registration, candidates should pay special attention to the pre-requisite and co-requisite requirements of courses as specified in the syllabuses. A prerequisite is a course which candidates must have completed in accordance with the conditions stipulated by the Dean via the Head of Department before being permitted to take a course in question. A co-requisite is a course which candidates must take at the same time as the course in question.

3.   Coursework and examination ratio

Each 6-credit course leads to one written examination paper which will be two hours in length, unless otherwise specified. The final grading will be determined by performance in the examination and assessment of coursework with the prefix STAT in the ratio of 75:25, unless otherwise stated. For other courses offered the assessment ratio will be announced by teachers at the beginning of each semester.

Candidates shall take 60 credits of courses in semesters I and II comprising:
STAT1801. Probability and statistics: foundations of actuarial science	(6 credits)
STAT1802. Financial mathematics	(6 credits)
Any two courses from Business, Economics, and Finance, with BUSI0016, being equivalent to FINA1002, considered as an introductory level Finance course.	(12 credits)
BUSI1002. Introduction to accounting	(6 credits)
CSIS1117. Computer concepts and programming	(6 credits)
MATH1803. Basic mathematics III	(6 credits)
6 credits of courses selected from List A	(6 credits)
CSCI0001. Practical Chinese language course for science students	(3 credits)
ECEN1801. Academic English for science students	(3 credits)
6 credits of broadening courses	(6 credits)

Candidates shall take 60 credits of courses in semesters III and IV comprising:
STAT2804. Linear models and forecasting	(6 credits)
STAT3810. Risk theory	(6 credits)
STAT2801. Life contingencies	(6 credits)
STAT2802. Statistical models	(6 credits)
STAT2803. Stochastic models	(6 credits)
STAT3801. Advanced life contingencies	(6 credits)
12 credits of courses selected from List B	(12 credits)
ECEN2802. Advanced academic English for science students	(3 credits)
Broadening courses:	
Humanities and Social Sciences studies	(3 credits)
Culture and Value Studies *or* any inter-faculty electives course outside BSc(ActuarSc) syllabus	(3 credits)
At least 3 credits of any other broadening course	(3 credits)

Candidates shall take 60 credits of courses in semesters V and VI comprising:
STAT3811. Survival analysis	(6 credits)
STAT2805. Credibility theory and loss distributions	(6 credits)
STAT2806. Financial economics	(6 credits)
STAT3812. Stochastic calculus with financial applications	(6 credits)
STAT3305 Financial Data Analysis	(6 credits)
STAT3806. Investment and asset management	(6 credits)
12 credits of courses selected from List C	(12 credits)
12 credits of inter/intra Faculty courses (advanced level)	(12 credits)

List A: BIOC1001. Basic Biochemistry
BIOL1104. Biological techniques, instrumentation and data processing
CHEM1301. Basic inorganic chemistry
CHEM1406. Basic organic chemistry
EASC1000. Earth's dynamic systems
MATH1101. Linear algebra I
PHYS1111. Introduction to mechanics
PHYS1112. Electricity and magnetism
PHYS1113. Heat, light and waves
POLI1002. Fundamentals of public administration
POLI1003. Making sense of politics
PSYC1001. Introduction to psychology
PSYC1002. How the mind works: explorations in basic thinking processes
PSYC1003. Psychology and life: personality and social influence
SOCI1001. Introduction to sociology
SOCI1002. Discovering society
SOCI1003. Introduction to anthropology
SOWK1001. Introduction to social administration
SOWK1003. Introduction to social welfare
Any other course approved by the Department of Statistics and Actuarial Science

List B:

BUSI0011. Corporate finance
BUSI0017. Financial markets and institutions
BUSI0019. Intermediate accounting I
BUSI0020. Intermediate accounting II
ECON2101. Microeconomic theory
ECON2102. Macroeconomic theory
ECON2113. Microeconomic Analysis
ECON2114. Macroeconomic Analysis
FINA0102. Financial markets and institutions
FINA0302. Corporate finance
MATH2303. Matrix theory and its applications
MATH2601. Numerical analysis
Any other course approved by the Department of Statistics and Actuarial Science

List C: STAT1304. The analysis of sample surveys
STAT2306. Business logistics
STAT2309. The statistics of investment risk
STAT3304 Computer-aided Statistical Modelling
STAT2312. Data mining
STAT3302. Multivariate data analysis
STAT3306. Selected topics in statistics
STAT3307. Project in statistics
STAT3308. Financial engineering
STAT3802. Advanced contingencies
STAT3807. Application of basic actuarial principles
STAT3809. Current topics in actuarial science
Any other course approved by the Department of Statistics and Actuarial Science

REGULATIONS FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE
(BSc[ActuarSc])

These regulations apply to students admitted in the academic years 2002-2003 and 2003-2004.

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

The degree of Bachelor of Science in Actuarial Science is an undergraduate degree, awarded for the satisfactory completion of a prescribed course of specialist training in actuarial science.

Definitions

AS1[1]   In these Regulations, and in the Syllabuses for the degree of BSc(ActuarSc), unless the context otherwise requires —
'Course' means a course of instruction which normally carries 6 credits or in some cases 3 credits or multiples of 3, leading to one examination paper as defined in the syllabus;
'Paper' means one or more of the following tests: a theoretical examination paper, a practical examination paper, an assessment of field practice, a thesis, and a dissertation, or other assignments as prescribed in the syllabus of the course leading to it;
'Credits' means the weight assigned to each course relative to the total study load. The number of credits is indicative of the contact hours and/or study time associated with the course on a weekly basis;
'Pre-requisite' means a course which candidates must have completed as specified to the satisfaction of the Head of Department before being permitted to take the course in question.

Admission to the degree

AS2   To be eligible for admission to the degree of Bachelor of Science in Actuarial Science candidates shall
  (a)   comply with the General Regulations;
  (b)   comply with the Regulations for First Degree Curricula; and
  (c)   complete the curriculum in accordance with the regulations that follow.

Length of study

AS3   The curriculum shall normally extend over three academic years consisting of six semesters of full-time study, excluding the summer semesters. Candidates shall not in any case be permitted to complete the curriculum in more than four academic years, which being the maximum period of registration.

Completion of the curriculum

AS4   To complete the curriculum, candidates shall:
  (a)   satisfy the requirements prescribed in UG3 of the Regulations for First Degree Curricula[2];

---

[1]   This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.
[2]   The specific requirements applicable to candidates of this degree curriculum are spelt out in the syllabuses.

(b)   enrol in not less than 180 credits of courses, unless otherwise required or permitted under the Regulations;

(c)   follow the required number of compulsory and elective courses as prescribed in the syllabuses of the equivalent of normally 60 credits for each year of study. For each semester, candidates shall select not less than 24 or more than 36 credits of courses, except for the last semester of study;

(d)   take a maximum of 84 credits of junior-level courses and the rest being senior-level courses as prescribed in the syllabuses over the entire period of studies; and

(e)   take not less than 84 credits of senior-level courses from the Department of Statistics and Actuarial Science.

Selection of courses

AS5   Candidates who wish to withdraw from a course at the beginning of each semester may do so up to 2 weeks after the commencement of the semester. Withdrawal beyond the 2-week deadline will not be permitted, except for medical or other reasons acceptable by the Faculty Board, and candidates' 'withdrawal from any course without permission will be given a failed grade.

Assessment and grades

AS6   Candidates should be assessed for each of the courses which they have registered. The assessment may take one or a combination of forms as prescribed in the syllabuses and shall normally include the candidates' coursework during the semester. Only those satisfactorily completed courses will earn credits.

AS7   Candidates' performance in a course shall be assessed with the grading system as prescribed in UG5 of the Regulations for First Degree Curricula.

Failure in examination

AS8   Candidates who fail in any course may, as directed by the Board of Examiners, be permitted to present themselves for re-assessment with or without repeating the failed course. The timing and the form(s) of re-assessment shall be decided by the Board of Examiners. Candidates shall not be allowed to repeat a course for which they have achieved a passed grade for upgrading purposes, nor shall they be permitted to repeat a course more than once. The failed grade will be recorded in the official transcripts. The new grade obtained after re-assessment of the same failed course will also be recorded and will replace the previous F grade in the calculation of the weighted grade point averages. As failed courses shall not be credited towards a degree, failed compulsory courses must be re-assessed.

Absence from examination

AS9   Candidates who are unable because of their illness to be present for any written examinations may apply for permission to present themselves for a supplementary examination to be held before the beginning of the first semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of absence from any examination. Candidates who fail to satisfy the examiners in one or more papers in such a supplementary examination shall be considered under the provisions made in these Regulations for failure at the first attempt at the examination, except that a further supplementary examination shall not be permitted.

Performance assessment

AS10   At the end of each semester, candidates' performance shall be assessed for the purposes of determining
  (a)   their eligibility for progression to an award of the degree;
  (b)   their eligibility for the award; or
  (c)   whether they be required to be discontinued from the programme.

Progression of studies

AS11   Candidates shall be permitted to progress if they have:
  (a)   not exceeded the maximum period of registration; and
  (b)   accumulated not less than 30 credits and attained a GPA of 1.00 or above over the first and second semesters; or
  (c)   accumulated not less than 30 credits and attained a GPA of 1.50 or above over the third and fourth semesters; or
  (d)   accumulated not less than 30 credits and attained a GPA of 1.50 or above over the fifth and sixth semesters; or
  (e)   attained a semester GPA of 1.50 or above at the end of each subsequent semester.

Those who have not been able to fulfill the requirements above shall be recommended for discontinuation from the programme under General Regulation G12.

Award of the degree

AS12   To be eligible for the award of the degree of BSc(ActuarSc), candidates shall have:
  (a)   achieved a weighted GPA of 1.00 or above;
  (b)   successfully accumulated a minimum of 180 credits; and
  (c)   satisfied the requirements in UG3 of the Regulations for First Degree Curricula.

Degree classification

AS13   A list of candidates who have successfully completed all the degree requirements shall be published in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, Pass. The classification of honours shall be determined by the Board of the Faculty at its full discretion by taking the overall performance of candidates and other relevant factors into consideration.

SYLLABUSES FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE

GENERAL FEATURES

1.   Curriculum requirements

Regulations AS1 to AS4 specify the requirements with which candidates have to comply for completion of the BSc(ActuarSc) degree programme. For the fulfillment of Regulation UG3 "Requirements for Graduation", candidates shall complete successfully the language studies courses and the broadening courses as listed below. Furthermore they should obtain a pass in an Information Technology proficiency test, or successfully complete a 3-credit course in Information Technology.

2.   Course registration

Course registration will take place before the commencement of each semester. All junior-level courses should be taken in the first or second semester except those specified in the syllabuses. In course registration, candidates should pay special attention to the pre-requisite and co-requisite requirements of courses as specified in the syllabuses. A prerequisite is a course which candidates must have completed in accordance with the conditions stipulated by the Head of Department before being permitted to take a course in question. A co-requisite is a course which candidates must take at the same time as the course in question.

3.   Coursework and examination ratio

Each 6-credit course leads to one written examination paper which will be two hours in length, unless otherwise specified. The final grading will be determined by performance in the examination and assessment of coursework in the ratio of 75:25, unless otherwise stated. For courses offered by the Schools of Business and Economics and Finance, the assessment ratio will be announced by teachers at the beginning of each semester.

Candidates shall take 60 credits of courses in semesters I and II comprising:
STAT1801. Probability and statistics: foundations of actuarial science	(6 credits)
STAT1802. Financial mathematics	(6 credits)
Any two courses from Business, Economics, and Finance	(12 credits)
BUSI1002. Introduction to accounting	(6 credits)
CSIS0911. Computer concepts and programming	(6 credits)
MATH1803. Basic mathematics III	(6 credits)
6 credits of courses selected from List A	(6 credits)
CSSC1001. Practical Chinese language course for social sciences students	(3 credits)
ECEN1901. Academic English for social sciences students	(3 credits)
6 credits of broadening courses	(6 credits)

Candidates shall take 60 credits of courses in semesters III and IV comprising:
STAT2804/STAT0801. Linear models and forecasting	(6 credits)
STAT3810/STAT0802. Risk theory	(6 credits)
STAT2801. Life contingencies	(6 credits)
STAT2802. Statistical models	(6 credits)
STAT2803. Stochastic models	(6 credits)
STAT3801. Advanced life contingencies	(6 credits)
12 credits of courses selected from List B	(12 credits)
ECEN2902. Professional communication for social sciences students	(3 credits)
Broadening courses:	
Science and Technology Studies	(3 credits)
Culture and Value Studies *or* any inter-faculty electives course outside BSc(ActuarSc) syllabus	(3 credits)
At least 3 credits of any other broadening course	(3 credits)

Candidates shall take 60 credits of courses in semesters V and VI comprising:
STAT3811/STAT0803. Survival analysis	(6 credits)
STAT2805/STAT0805. Credibility theory and loss distributions	(6 credits)
STAT2806/STAT0806. Financial economics	(6 credits)
STAT3812/STAT0807. Stochastic calculus with financial applications	(6 credits)
STAT3802. Advanced contingencies	(6 credits)
STAT3806. Investment and asset management	(6 credits)
12 credits of courses selected from List C	(12 credits)
12 credits of inter/intra Faculty courses (senior-level)	(12 credits)

List A: POLI1002. Fundamentals of public administration
POLI1003. Making sense of politics
PSYC1001. Introduction to psychology
PSYC1002. How the mind works: explorations in basic thinking processes
PSYC1003. Psychology and life: personality and social influence
SOCI1001. Introduction to sociology
SOCI1002. Discovering society
SOCI1003. Introduction to anthropology
SOWK1001. Introduction to social administration
SOWK1003. Introduction to social welfare
Any other course approved by the Department of Statistics and Actuarial Science

List B: BUSI0016. Introduction to finance
BUSI0011. Corporate finance
BUSI0017. Financial markets and institutions
BUSI0019. Intermediate accounting I
BUSI0020. Intermediate accounting II
ECON2101. Microeconomic theory
ECON2102. Macroeconomic theory
ECON2113. Microeconomic analysis
ECON2114. Macroeconomic analysis
FINA1002. Introduction to finance
FINA0102. Financial markets and institutions
FINA0302. Corporate finance
MATH2303. Matrix theory and its applications
MATH2601. Numerical analysis
Any other course approved by the Department of Statistics and Actuarial Science

List C: STAT1304/STAT0104. The analysis of sample surveys
STAT2305/STAT0105. Quality control an management
STAT2306/STAT0106. Business logistics
STAT2309. The statistics of investment risk
STAT3304/STAT0111. Computer-aided statistical modelling
STAT2312/STAT0114. Data mining
STAT3302/STAT3102. Multivariate data analysis
STAT3306/STAT3106. Selected topics in statistics
STAT3307/STAT3108. Project in statistics
STAT3308/STAT3110. Financial engineering
STAT3807. Application of basic actuarial principles
STAT3809. Current topics in actuarial science
Any other course approved by the Department of Statistics and Actuarial Science

Note: For candidates admitted in 2004-2005 and onwards, STAT3802 "Advanced Contingencies" will move to List C.

JUNIOR-LEVEL COURSES

Language studies courses

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

CSSC1001. Practical Chinese language course for social sciences students (3 credits)

This course aims at enhancing students' knowledge and skills in practical Chinese writing in the social sciences. Students will be introduced to simplified Chinese characters, and will be trained to write letters, proposals, reports, press releases and announcements. They will also acquire the skills in making public speeches and presentations. The course involves extensive use of Chinese IT applications.
Assessment: 50% coursework, 50% examination.

ECEN1801. Academic English for science students (3 credits)

To build confidence in the use of English for writing and speaking about science. The focus is on:
    (1) Writing an essay which meets the requirements of good academic writing, in particular making appropriate use of published sources and avoiding plagiarism.
    (2) Speaking in an organized and coherent manner.

ECEN1901. Academic English for social sciences students (3 credits)

This course introduces students to features of speaking and writing in English in an academic context. Through small group work related to language and disciplinary issues the course develops abilities to produce clear and coherent spoken and written discourse for university study in the social sciences. Assessment: 100% coursework.

ECEN2802. Advanced academic English for science students (3 credits)

To develop a sense of audience awareness in writing, to develop spontaneous speaking skills and to individualise language learning. The focus is on:
    (1) Writing a short article for one of a range of web journals each with a different audience and topic focus (individual choice).
    (2) Spontaneous (i.e. unrehearsed) discussion through participation in seminars and one-to-one discussions.
    (3) Developing independent language learning skills to help students address their individual language problems and focus on their future language needs.

ECEN2902.   English for Professional communication for social sciences students (3 credits)

The course prepares students to communicate effectively and accurately and prepare themselves for workplace situations which entail the use of English. It requires students to investigate an issue relevant to their studies, improve their interview and presentation skills and write various professional documents.
Assessment: 100% coursework.

Core Courses

STAT1801.   Probability and statistics: foundations of actuarial science (6 credits)

This course provides the basic foundations in probability and statistics for students in the Statistics Stream or B.Sc.(ActuarSc), though the course is also suitable for mathematically-able students from other quantitative curricula. Probability theory underpins the study of statistics. The course aims firstly to develop skills in probabilistic analysis for problems involving randomness. Random variables and probability distributions are studied in depth. The concepts of statistics are then introduced, guided by motivating examples.
Prerequisite: A-Level Pure Mathematics or equivalent.

STAT1802.   Financial mathematics (6 credits)

This course introduces the mathematics of finance which plays an important role in the development of basic actuarial techniques. Practical applications of the actuarial functions and notation are considered also. Key topics include: measurement of interest, including accumulated and present value factors; annuities certain; yield rates; amortization schedules and sinking funds; bonds and related securities; practical applications such as real estate mortgage, short sales and modern financial instruments; discounted cash flow; capital gains tax; stochastic approaches to interest; consumer credit; capital redemption policies. Assessment: 50% coursework, 50% examination.
Examination: One three-hour written paper.
Prerequisite: STAT1801.

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.

CSIS0911.   Computer concepts and programming (6 credits)

This course introduces the basic computing concepts and the art of computer programming. Major topics include: basic concepts and vocabulary of computers, techniques for the design and construction of computer programs, use of a high-level language and standard libraries to solve problems over a wide range of applications, etc. Assessment: 40% coursework, 60% examination.
Examination: One three-hour written paper.

CSIS1117.   Computer programming (6 credits)

The goal of this course is for students to learn the general principles of programming, including how to design, implement, document, test, and debug programs. Assessment: 50% coursework; 50% examination.

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)

List A

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

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

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

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

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 in 2004-2005.*

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

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

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

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

Unless otherwise specified by the Department of Politics and Public Administration, the final grading for each course will be determined by performance in the examination and assessment of coursework in a ratio to be announced by individual course instructors at the beginning of each semester. The weighting of examination ranges from 40-60% of total course assessment.

POLI1002.　　Fundamentals of public administration (6 credits)

This is a basic course in Public Administration. It seeks to introduce students to fundamental concepts and approaches. The three main areas of concern are: (1) the development of the discipline over the years; (2) the identification of the critical issues and problems related to modern public administration; and (3) the relationship between public administration and politics. In exploring these questions, special emphasis will be placed on Hong Kong's situation.

POLI1003.　　Making sense of politics (6 credits)

This is a foundation course aimed at equipping students with the basic tools and concepts to make sense of the political world. Current issues will be discussed with the help of newspaper clippings and video excerpts. No prior knowledge of Government and Public Affairs (GPA) is needed.

PSYC1001.　　Introduction to psychology (6 credits)

Discussion of basic concepts in psychology and a preliminary survey of representative work carried out in various areas of psychological investigation, together with an investigation at some length of one such area. Assessment: 40% coursework, 60% examination.
Eligibility: Students taking or having taken PSYC1002 or PSYC1003 are not allowed to take this course.

PSYC1002.   How the mind works: explorations in basic thinking processes (6 credits)

We are all fascinated by the achievements of the human mind or brain. But we may also often ask ourselves how we can do things better, for example, remember more efficiently. This course will help us to understand more about the ways in which we solve problems, how we develop our abilities to communicate through language, and how we think creatively. It will help us to answer questions about why we forget things, how we manage to see things in the world around us, why we sleep and what our dreams mean. We will look at the ways in which the human brain operates, and how it manages to do such amazing things, through reference to research findings, theories and our own practical work. Lectures will include class demonstrations and activities, as well as videos, presented in a way to enhance your interest in, and memory of, what is already a fascinating area. Assessment: 50% coursework, 50% examination.
Eligibility: Students taking or having taken PSYC1001 are not allowed to take this course.

PSYC1003.   Psychology and life: personality and social influence (6 credits)

Through lectures and a series of stimulating class activities, students in this course will learn the latest research discoveries in motivation and emotion, human development, intelligence, personality, psychological testing, stress and health, abnormal psychological functioning, psychotherapy, social attraction, social influence and social competence. The course is intended to enhance the development of self-understanding and social competence. Assessment: 40% coursework, 60% examination.
Eligibility: Students taking or having taken PSYC1001 are not allowed to take this course.

SOCI1001.   Introduction to sociology (6 credits)

This course introduces students to the nature of sociological enquiry and the basic concepts used in sociological analysis. After some reference to the influence of inheritance and environment on human social behaviour, the course will focus on key concepts used in the analysis of cultures, social structures, social processes and social change. The relationship between research, concepts and contemporary theory will be explored at an introductory level. Assessment: 40% coursework, 60% examination.

SOCI1002.   Discovering society (6 credits)

This course introduces students to the sociological way of thinking through reference mainly to Chinese societies such as Hong Kong, Mainland China, and overseas Chinese communities. Assessment: 40% coursework, 60% examination.

SOCI1003.   Introduction to anthropology (6 credits)

This course will explore, through cross-cultural comparison, key social and cultural issues, such as marriage and the family, caste and class, ethnicity and identity, language and culture, state formation, economic value, gender and religion. The course will draw on studies of the peoples and cultures of Asia. Assessment: 40% coursework, 60% examination.

SOWK1001.   Introduction to social administration (6 credits)

This is a basic course in the understanding of social policy in the areas of human resources planning and education, land use and housing, ageing and social security, family and support services, etc. Assessment: 40% coursework, 60% examination.

SOWK1003.   Introduction to social welfare (6 credits)

This course introduces the basic concepts and function of social welfare. Analysis will be undertaken of the range and variety of social services in Hong Kong including family services, youth centres, outreaching services, school social work, community development, rehabilitation, elderly services, probation and correctional services. Assessment: 40% coursework, 60% examination.

SENIOR-LEVEL COURSES

STAT2804/STAT0801.   Linear models and forecasting (6 credits)

This course deals with applied statistical methods of linear models and investigates various forecasting procedures through time series analysis. Contents include: regression and multiple linear regression; time series models including autoregressive, moving average, autoregressive-moving average and integrated models; non-stationary and non-linear time series models.
Examination: One three-hour written paper.
Prerequisites or co-requisite: STAT0100 or STAT0605 or STAT2802.
Eligibility: Students taking or having taken STAT0102 or SAT0604 or STAT3301/STAT3101 are not allowed to take this course.

STAT3810/STAT0802.   Risk theory (6 credits)

Risk theory studies the deviations of financial results from those expected and deals with methods of avoiding inconvenient consequences from such deviations. This course deals with ruin theory; credibility; the applications of statistical models and stochastic processes to short-term insurance such as fire insurance, private motor insurance, and short-term disability insurance. The general scope of the course content is as follows: economics of insurance; individual risk models; collective risk models; ruin theory; reinsurance; run-off triangles; simple experience rating systems; applications of risk theory.
Examination: One three-hour written paper.
Prerequisites or co-requisite: STAT2803 or STAT2303/STAT0103 or MATH2603.

STAT3811/STAT0803.   Survival analysis (6 credits)

This course is concerned with how models which predict the survival pattern of humans or other entities are established. This exercise is sometimes referred to as survival-model construction. Topics covered are: the nature and properties of survival models, including both parametric and tabular models; methods of estimating tabular models from both complete and incomplete data samples, including the actuarial, moment, and maximum likelihood estimation techniques; methods of estimation parametric models from both complete and incomplete data samples, including parametric models with concomitant variables; evaluation of estimators from sample data; valuation schedule exposure formulas; practical issues in survival model estimation; statistical models including binomial and Poisson models; practical methods of estimating age specific single decrement rates; analysis of age and duration; practical considerations in life-office data collection, monitoring actual experience against that expected.
Examination: One three-hour written paper.
Prerequisites or co-requisite: STAT2802 or STAT0102 or STAT0604.

STAT2805/STAT0805.   Credibility theory and loss distributions (6 credits)

Credibility is an example of a statistical estimate. The idea of credibility is very useful in premium calculation. Insurance loss varies according to the business nature, what distribution should be used to fit a particular loss is both of theoretical interest and practical importance. This course covers important

actuarial and statistical methods. Topics on credibility include: Limited fluctuation approach, Bühlmann's approach, Bayesian approach, and their applications. Topics on loss distribution will be: Some often used distributions for loss and properties, truncation and modification, compound distributions, and mixed models.

Examination: One three-hour written paper.

Prerequisite or co-requisite: STAT0100 or STAT0604 or STAT0605 or STAT3810/STAT0802 or STAT2802.

STAT2806/STAT0806.   Financial economics (6 credits)

This course covers the skills necessary to construct and apply asset liability models to value financial derivatives. Topics include asset pricing and portfolio selection models, stochastic asset models, and valuation of derivative securities.

Examination: One three-hour written paper.

Prerequisites or co-requisite: STAT2802 or STAT0100 or STAT0604 or STAT0605.

STAT3812/STAT0807.   Stochastic calculus with financial applications (6 credits)

Stochastic calculus has become an essential tool in economics, insurance, finance and econometrics. This mathematical theory is the basis for pricing financial derivatives such as options and futures. This course is designed for students to develop professional skills in stochastic calculus and its applications to actuarial science and finance. Pure mathematical components of the course will be kept at a reasonably low level. The course begins with an overview of the basic concepts from probability theory. Stochastic processes, especially Brownian motion and martingales will be discussed. The main topics of the course include: Ito's stochastic integral, Ito's formula and stochastic differential equations. After developing the theory of stochastic calculus, some applications to finance and actuarial science will be discussed.

Prerequisites or co-requisite: STAT2303/STAT0103 or STAT2803 or MATH2603.

STAT2801.   Life contingencies (6 credits)

The major objectives of this course are to integrate life contingencies into a full probabilistic framework and to demonstrate the wide variety of constructs which are then possible to build from basic models at the foundation of actuarial science. The time-until-death random variable will be the basic building block by which models for life insurances, designed to reduce the financial impact of the random event of untimely death, will be developed. Techniques for calculation net premiums and net premiums reserves of various types of life annuity and insurance will be discussed. Topics include: survival distributions and life tables; net single premiums and net annual premiums for a range of life insurance policies; commutation functions; net premium reserves. Assessment: 50% coursework, 50% examination.

Examination: One three-hour written paper.

Prerequisites or co-requisite: (STAT0100 and STAT0113) or (STAT2802 and STAT1802).

STAT2802.   Statistical models (6 credits)

This course builds on STAT1004 / STAT1801, introducing further the concepts and methods of statistics. Emphasis is on the two major areas of statistical analysis: estimation and hypothesis testing. Through the disciplines of statistical modelling, inference and decision making, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of real-life data.

Examination: One three-hour written paper.

Prerequisite: STAT1801.

STAT2803.   Stochastic models (6 credits)

This course focuses on the concepts and applications of some very useful stochastic models. Main topics include probability theory, Markov chain, Poisson process, continuous-time Markov chain, Brownian motions and applications in finance.
Examination: One three-hour written paper.
Prerequisite: STAT1801.

STAT3801.   Advanced life contingencies (6 credits)

This course builds on the material covered in STAT2801. Several extensions of the basic theory of life contingencies and insurance models are discussed. The analysis of financial benefits contingent on the time of death of a single life can be extended to benefits involving several lives. The multiple decrement models, instead of a single contingency of death, are studied. Applications of these advanced theories are given. Contents include: select and ultimate tables; multiple life functions; multiple decrement models; valuation for pension plans; nonforfeiture benefits and dividends including surrender values and paid-up insurance; gross premiums; gross premium reserves; alterations to life insurance policies.
Examination: One three-hour written paper.
Prerequisite: STAT2801.

STAT3802.   Advanced contingencies (6 credits)

This course serves as a continuation of STAT3801 and extends the coverage of statistical models and actuarial techniques used in the field of life insurance. Topics covered are: further analysis of the multiple decrement model; multiple state model; disability contracts; long-term care contracts; unit-linked contracts; with profit policies; emerging costs methods; profit testing; asset shares; cost of guarantees and options; applications of actuarial techniques to a wide range of insurance problems.
Examination: One three-hour written paper.
Prerequisite: STAT3801.

STAT3305.   Financial data analysis (6 credits)

This course focuses on understanding financial data and methods by which they are analyzed and interpreted. It aims at enhancing the students' analytical skills of developing statistical models for analysing financial data. Techniques are motivated by examples and developed in the context of applications. Students will learn how to process financial data for purposes of financial analysis, estimation and testing of financial models and to understand better crucial aspects of financial market movements.
Prerequisite: STAT2309 or STAT2806 or ECON1001.

STAT3806.   Investment and asset management (6 credits)

A problem faced by the insurance industry is that of interest rate fluctuations. Two useful methods for insulating the value of a portfolio of assets and liabilities against shifts in the term structure of interest rates are cash-flow matching and immunization. This course covers the following topics: introduction to financial markets, the structure of interest rates, cash-flow matching methods and immunization models.
Prerequisite: STAT2802.

List B

BUSI0016.   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 capital, and financial planning and forecasting. Throughout the course emphasis will be placed on the basic paradigms in finance including net present value, the capital asset pricing model and market efficiency.
Eligibility: Students taking or having taken FINA1002 are not allowed to take this course.
Remarks: It is advisable to take BUSI1002 prior to this course.

BUSI0011.   Corporate finance (6 credits)

A course on the advanced treatment of corporate financial decisions. Topics to be covered include corporate valuation; cost of capital; capital structure; leasing; mergers and acquisitions; options; warrants; and convertible bonds.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics; and BUSI0016 Introduction to finance *or* FINA1002 Introduction to finance.
Eligibility: Students taking or having taken FINA0302 are not allowed to take this course.

BUSI0017.   Financial markets and institutions (6 credits)

This course is designed to introduce and analyze the structure, operations and functions of the financial system. The course starts with an introduction to financial markets' role in the economy, and the determination of interest rates and valuation of cash flows. The course then discusses various financial markets including money markets, bond markets, mortgage markets, stock markets and derivatives markets. Financial institutions will be discussed with an emphasis on their major functions and operations.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics; and BUSI0016 Introduction to finance *or* FINA1002 Introduction to finance.
Eligibility: Student taking or having taken FINA0102 are not allowed to take this course.

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.

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.

ECON2101.   Microeconomic theory (6 credits)

The laws of demand, supply, returns, and costs; price and output determination in different market situations; theory of factor pricing and income distribution; general equilibrium; interest and capital.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics.
Eligibility: Student taking or having taken ECON2113 are not allowed to take this course.

ECON2102.   Macroeconomic theory (6 credits)

Theories of income, employment, and the price level; analysis of secular growth and business fluctuations; introduction to monetary and fiscal policy.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics.
Eligibility: Student taking or having taken ECON2114 are not allowed to take this course.

ECON2113.   Microeconomic 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 Introduction to Economics I or A-level Economics.
Remarks: Open only to non-B.Econ, non-B.Fin and non-B.Econ&Fin students; candidates who have taken ECON2101 Microeconomic theory are not allowed to take this course.

ECON2114.   Macroeconomic 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 Introduction to Economics I or A-level Economics.
Remarks: Open only to non-B.Econ, non-B.Fin and non-B.Econ&Fin students; candidates who have taken ECON2102 Macroeconomic theory are not allowed to take this course.

FINA1002.   Introduction to finance (6 credits)

An introduction to finance with an 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 capital, and financial planning and forecasting. Throughout the course, emphasis will be placed on the basic paradigms in finance including net present value, the capital asset pricing model and market efficiency.
Eligibility: Students taking or having taken BUSI0016 are not allowed to take this course.
Remarks: It is advisable to take BUSI1002 Introduction to accounting prior to this course.

FINA0102.   Financial markets and institutions (6 credits)

This course is designed to introduce and analyze the structure, operations and functions of the financial system. The course starts with an introduction to financial markets' role in the economy, and the determination of interest rates and valuation of cash flows. The course then discusses various financial markets including money markets, bond markets, mortgage markets, stock markets and derivatives markets. Financial institutions will be discussed with an emphasis on their major functions and operations.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics; and BUSI0016 *or* FINA1002
Eligibility: Student taking or having taken BUSI0017 are not allowed to take this course.

FINA0302. **Corporate finance (6 credits)**

A course on the advanced treatment of corporate financial decisions. Topics to be covered include corporate valuation; cost of capital; capital structure; leasing; mergers and acquisitions; options; warrants; and convertible bonds.
Prerequisite: ECON1001 Introduction to Economics I or A-level Economics; and BUSI0016 *or* FINA1002.
Eligibility: Students taking or having taken BUSI0011 are not allowed to take this course.

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)

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.

List C

STAT1304/STAT0104. **The analysis of sample surveys (6 credits)**

We often try to infer the characteristics of a population by taking a sample from that population. This approach is usually forced upon us for economic, ethical or technological reasons. This course considers the basic theory for the design and analysis of surveys.
Prerequisite or co-requisite: STAT1000 or STAT1003 or STAT1007 or STAT1801 or STAT0601 or STAT1001 or STAT1006 or STAT1008 or STAT2001 or STAT0602 or ECON1003 or ECOL2006.

STAT2305/STAT0105. **Quality control and management (6 credits)**

The successful control of quality in production is a matter of primary importance to a company's probability and good-will. This course provides an overview of the cost/quality compromise which involves both the producer and the consumer. It presents a variety of statistical solutions including control charts, acceptance sampling plans, sequential sampling procedures, continuous sampling plans, analysis of measurement errors, reliability, life-testing, and experimental designs. Taguchi's concepts and methods of quality engineering will be discussed. Contemporary quality management systems such as total quality control, quality control circle, zero defects, and ISO-9000 will be introduced. The student is brought to the frontier of today's quality control and management.
Prerequisite or co-requisite: STAT0100 or STAT2802 or STAT0604 or STAT0605.

STAT2306/STAT0106.　　　　Business logistics (6 credits)

Originally, the word 'logistics' described the strategic aspects involved in moving and supplying armies and navies. Usage grew to include games of strategy, such as chess. Modern business corporations are increasingly using logistics as a management tool, for example, in capital budgeting problems, production planning, scheduling, transportation or in deciding a location for a new factory. This course addresses the business applications of logistics. Contents include: optimization techniques applied to problems in the allocation of resources, financial planning and transportation; linear programming, dynamic programming, and integer programming; network analysis, critical path methods; queuing theory; and probability modelling tools in production and inventory control.
Prerequisite or co-requisite: STAT1000 or STAT1001 or STAT1003 or STAT1006 or STAT1007 STAT1008 or STAT1801 or STAT2001 or STAT0601 or STAT0602 or ECON1003 or ECOL2006.
Eligibility: Students taking or having taken MATH2901 are not allowed to take this course.

STAT2309.　　　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 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 methods for investment decisions in these vital markets. Particular issues include the concept of an efficient market, portfolio construction and analysis, asset pricing and management, and technical analysis.
Prerequisite or co-requisite: STAT0100 or STAT2802 or STAT0604 or STAT0605.

STAT3304/STAT0111.　　　　Computer-aided statistical modelling (6 credits)

This is a computer-aided course of statistical modelling designed for the students who have taken STAT0102/STAT2301 Linear Statistical Analysis and like to see theory illustrated by practical computation. Numerous real data sets will be presented for modelling and analysis using statistical software, such as SAS, for gaining hands-on experience. The course also aims to develop skills of model selection and hypotheses formulation for testing, so that 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 software such as SAS makes this interactive approach easier. Assessment: 50% coursework, 50% examination.
Examination: One three-hour written paper.
Prerequisite or co-requisite: STAT2301/STAT0102 or STAT2804/STAT0801 or STAT2311.

STAT2312/STAT0114.　　　　Data mining (6 credits)

With an explosion in information technology in the past decade, vast amounts of data appear in a variety of fields such as finance, marketing research, customer relations management, medicine and healthcare. The challenge of understanding these data with the aim of creating new knowledge and finding new relationships among data attributes has led to the innovative usage of statistical methodologies and development of new ones. In this process, a new area called data mining is spawned. This course provides a comprehensive and practical coverage of essential data mining concepts and statistical models for data mining, including data pre-processing, association rules, classification and regression trees, neural networks, and cluster analysis. Assessment: 60% coursework, 40% examination.
Prerequisite or co-requisite: STAT1801 or STAT1000 or STAT1007 or STAT0601 or STAT0602 or STAT1001 or STAT1003 or STAT1006 or STAT1008 or STAT2001 or ECON1003 or ECOL2006.

STAT3302/STAT3102.   Multivariate data analysis (6 credits)

In many designed experiments or observational studies the researchers are dealing with multivariate data, where each observation is a set of measurements taken on the same individual. These measurements are often correlated. The correlation prevents the use of univariate statistics to draw inferences. This course develops the statistical methods for analysing multivariate data through examples in various fields of application and hands-on experience with the statistical software SAS. Contents included: Problems with multivariate data. Multivariate normality and transforms. Correlations: Simple, partial, multiple and canonical. Principal components analysis. Factor analysis. Mean structure for one sample. Problems for means of several samples. Multivariate analysis of variance. Discriminant analysis. Classification. Multivariate multiple regression. Clustering algorithms.
coursework, 50% examination.
Examination: One three-hour written paper.
Prerequisite or co-requisite: STAT2301/STAT0102 or STAT2804/STAT0801.

STAT3306/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, they are aided by well-developed theories and methods which bring many problems into a standard framework. This course presents such theory and methods. The emphasis may vary slightly from year to year.
Prerequisite or co-requisite: STAT2301/STAT0102 or STAT2804/STAT0801 or STAT0604.

STAT3307/STAT3108.   Project in statistics (6 credits)

Each year a few projects suitable for Statistics or Actuarial Science major students will be offered. These projects, under the supervision of individual staff members involve the application of statistics and/or probability in interesting situations. They provide students with practical experience in approaching a real problem, in report writing and in oral presentation. Assessment: 80% written report, 20% oral presentation.
Prerequisite or co-requisite: STAT2301/STAT0102   or   STAT0604   or   (STAT2802   and STAT2804/STAT0801).
Eligibility: Approval is subject to past academic performance. Availability of this course to Actuarial Science students is also subject to a quota.

STAT3308/STAT3110.   Financial engineering (6 credits)

This course aims at demonstrating the practical use of financial derivative products to analyse various techniques used in financial engineering. This course also examines financial risk measurement and management by applying advanced time series models commonly used in quantitative finance. This course covers futures market, option pricing (Binomial, Black Scholes), financial time series models including ARCH models and generalisation, stochastic volatility models and threshold models, tests for unit root and cointegration, methods of estimating of volatilities and correlations including RiskMetrics and GARCH, Value at Risk and stress testing.
Pre-requisite or co-requisite: STAT2309/STAT0109 or STAT2806/STAT0806.

STAT3807.   Application of basic actuarial principles (6 credits)

This course covers basic principles of design, risk classification, pricing/ratemaking/funding, profit/surplus analysis, and valuation of financial security programmes including life, health, retirement plans, and property casualty insurance.
Co-requisite: STAT3801.

STAT3809.   Current topics in actuarial science (6 credits)

This course covers a range of branches of professional actuarial work which may include topics from life, health, financial planning, property and casualty and reinsurance.
Prerequisite: STAT2802.