

# **BSc in Actuarial Science**

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Syllabuses and Regulations  
(3-year curriculum)

**2012-13**

**Faculty of Science**  
The University of Hong Kong

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SECTION I Objectives and Learning Outcomes

**Degree : Bachelor of Science in Actuarial Science**

**Objectives :** The Actuarial Science curriculum at the University of Hong Kong aims at providing formal academic and professional training to students who wish to join the actuarial profession. Although actuarial science is a separate discipline with its own area of knowledge, modern actuarial training requires multidisciplinary knowledge such as probability, statistics, economics, investment, finance, law, taxation, and accounting. The Actuarial Science curriculum reflects this by incorporating various interdisciplinary courses into the basic actuarial training. The programme is set up to equip students with solid background in actuarial science, to develop their confidence and analytical skills to define and tackle problems in actuarial science and other related fields. Specifically, the programme is designed to provide adequate knowledge for students to sit for the early professional examinations organized by international actuarial organizations so that they can successfully join the actuarial profession after graduation. In addition, the programme provides enough academic training for students who wish to pursue postgraduate studies in actuarial science or other related areas.

**Learning Outcomes of Actuarial Science Programme**

Students would be able to:

- a. understand and apply various analytic and quantitative methods to define and solve problems in insurance, finance, economics, investment, pension, financial risk management and demography;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- b. understand and identify the nature of insurance, finance and investment risks;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- c. develop analytical skills to evaluate and measure various kinds of risk;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- d. formulate effective business strategies to manage them;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- e. pass the early professional examinations organized by international actuarial organizations;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- f. pursue postgraduate studies in actuarial science or other related fields;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*
- g. discuss current actuarial issues and acquire and apply practical knowledge in some specially designed courses;  
*(by means of coursework and tutorial classes and/or research-based project in the curriculum)*

In addition, some students can join our internship programme to gain work experience before graduation.

*(by means of internship in the curriculum)*

## SECTION II List of BSc(ActuarSc) Courses\*\* on offer in 2012/13 and 2013/14^

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2012-2013 0=year long 1=1st sem * 2=2nd sem S=summer	Exam held in 2012-2013	Quota	Course Coordinator
				2012-2013	2013-2014				
STAT1801	Probability and statistics: foundations of actuarial science	6	(E or above in AL Pure Math or AS Math & Stat; or (Pass in MATH1813, or already enrolled in this course); and Not for students who have passed or enrolled in any of these courses: STAT0301, STAT0302, STAT1301, STAT1306.	Y	Y	1	Dec	---	Dr Y K Chung, Statistics and Actuarial Science
STAT1802	Financial mathematics	6	(E or above in AL Pure Math or AS Math & Stat); and (Pass in STAT1302, or already enrolled in this course; or Pass in STAT1801, or already enrolled in this course); and Not for students who have passed in STAT2315, or have already enrolled in this course.	Y	Y	2	May	---	Prof K C Yuen, Statistics and Actuarial Science
STAT2302	Statistical inference	6	Pass in STAT1302 or STAT2802	Y	Y	1	Dec	---	Prof S M S Lee, Statistics and Actuarial Science
STAT2306	Business logistics	6	Pass in BIOL1608 or BIOL2608 or ECON1003 or STAT0301 or STAT0302 or STAT1301 or STAT1306 or STAT1801; and Not for students who have passed MATH2901, or have already enrolled in this course.	Y	Y	1	Dec	---	Ms O T K Choi, Statistics and Actuarial Science
STAT2312	Data mining	6	Pass in STAT1302 or STAT1306 or STAT2802 (Any student who has already passed in BIOL1608 or BIOL2608 or ECON1003 or STAT0301 or STAT0302 or STAT1301 or STAT1801 in 2009-10 or before can still apply for the course in 2012-2013.)	Y	Y	2	No exam	48	Dr G C S Lui, Statistics and Actuarial Science
STAT2316	Advanced SAS programming	6	Pass in STAT1303	N	Y	---	---	96	TBC, Statistics and Actuarial Science
STAT2801	Life contingencies	6	(Pass in STAT1302 and STAT2315) or (Pass in STAT1802 and (Pass in STAT2802, or already enrolled in this course)) or (Pass in STAT1302 and STAT1802)	Y	Y	1	Dec	---	Dr E C K Cheung, Statistics and Actuarial Science
STAT2802	Statistical models	6	Pass in STAT1801. (For BSc(Actuarial Science) students only)	Y	Y	1	Dec	---	Dr G Tian, Statistics and Actuarial Science
STAT2803	Stochastic models	6	For BSc(Actuarial Science) students only; and Pass in STAT1801; and Not for students who have passed in MATH2603, or have already enrolled in this course; and Not for students who have passed in STAT2303, or have already enrolled in this course.	Y	Y	1	Dec	---	Dr J F Yao, Statistics and Actuarial Science

\*\* This list only includes courses offered by the Department of Statistics and Actuarial Science.

^ Availability of courses in 2013-2014 is subject to change.

## List of BSc(ActuarSc) Courses

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2012-2013 0=year long 1=1st sem * 2=2nd sem S=summer	Exam held in 2012-2013	Quota	Course Coordinator
				2012-2013	2013-2014				
STAT2804	Linear models and forecasting	6	(Pass in STAT1302; or Pass in STAT2802, or already enrolled in this course); and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT2301, or have already enrolled in this course; and Not for students who have passed in STAT3301, or have already enrolled in this course; and Not for students who have passed in ECON0701, or have already enrolled in this course.	Y	Y	2	May	---	Prof Y Lam, Statistics and Actuarial Science
STAT2805	Credibility theory and loss distributions	6	Pass in STAT1302 or STAT2802 or STAT3810	Y	Y	1	Dec	---	Dr K C Cheung, Statistics and Actuarial Science
STAT2807	Corporate finance for actuarial science	6	Pass in BUSI1002 and STAT1802; or Pass in STAT2310 and STAT2315.	Y	Y	2	May	---	Dr J K Woo Statistics and Actuarial Science
STAT2812	Financial economics I	6	Pass in STAT1302 or STAT2802; and Not for students who have passed in STAT3303, or have already enrolled in this course; and Not for students who have passed in FINA0301, or have already enrolled in this course.	Y	Y	1	Dec	---	Prof H L Yang, Statistics and Actuarial Science
STAT2813	Internship in actuarial science	6	Pass in STAT1802 or STAT2801; and For BSc(Actuarial Science) students only	Y	Y	1, 2	No exam	---	Dr L F K Ng, Statistics and Actuarial Science
STAT2820	Introduction to financial derivatives	6	Pass in STAT1802; and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT3303, or have already enrolled in this course; and Not for students who have already passed in STAT3308 before; and Not for students who have passed in FINA0301, or have already enrolled in this course.	Y	Y	1	Dec	---	Dr E C K Cheung, Statistics and Actuarial Science
STAT3302	Multivariate data analysis	6	Pass in STAT2301 or STAT2804	Y	Y	2	May	60	Prof T W K Fung, Statistics and Actuarial Science
STAT3304	Computer-aided statistical modelling	6	Pass in STAT2301 or STAT2804; and Not for students who have passed in STAT2311, or have already enrolled in this course.	Y	Y	2	May	60	Dr G Tian, Statistics and Actuarial Science
STAT3306	Selected topics in statistics	6	Pass in STAT2301 or STAT2804. This course is mutually exclusive to STAT6009.	Y	Y	1	Dec	---	Prof S M S Lee, Statistics and Actuarial Science
STAT3316	Advanced probability	6	Pass in STAT2303 or STAT2803. This course is mutually exclusive to STAT6010.	Y	Y	1	Dec	---	Prof Y Lam, Statistics and Actuarial Science
STAT3320	Risk management and Basel Accords in banking and finance	6	Pass in STAT2812 or STAT2820 or STAT2808 or STAT3303 or STAT3308 or FINA0301; and Not for students who have already passed in STAT2320 before.	Y	Y	2	May	---	Mr P K Y Pang, Statistics and Actuarial Science

List of BSc(ActuarSc) Courses

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2012-2013 0=year long 1=1st sem * 2=2nd sem S=summer	Exam held in 2012-2013	Quota	Course Coordinator
				2012-2013	2013-2014				
STAT3321	Credit risk analysis	6	Pass in STAT2812 or STAT3303 or STAT3308 or STAT2808 or STAT2820 or FINA0301, or already enrolled in one of these courses.	Y	Y	2	May	---	Mr K P Wat, Statistics and Actuarial Science
STAT3322	Market risk analysis	6	Pass in ECON1001 or FINA2802 or STAT2309; or Pass in STAT2812 or STAT2806, or already enrolled in either course.	Y	Y	2	May	---	Dr Z Zhang, Statistics and Actuarial Science
STAT3801	Advanced life contingencies	6	Pass in STAT2801, or already enrolled in this course; and For BSc(Actuarial Science) students only.	Y	Y	2	May	---	Dr L F K Ng, Statistics and Actuarial Science
STAT3802	Advanced contingencies	6	Pass in STAT3801; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec	---	Prof H L Yang, Statistics and Actuarial Science
STAT3806	Investment and asset management	6	Pass in STAT2801; and For BSc(Actuarial Science) students only; and Not for students who have passed in FINA2802, or have already enrolled in this course.	N	Y	---	---	---	Head of Dept, Statistics and Actuarial Science
STAT3807	Fundamentals of actuarial practice	6	Pass in STAT3801; and For BSc(Actuarial Science) students only.	Y	Y	1	No exam	---	Dr L F K Ng, Statistics and Actuarial Science
STAT3809	Current topics in actuarial science	6	(Pass in STAT2801, or already enrolled in this course; or Pass in STAT3801, or already enrolled in this course); and For BSc(Actuarial Science) students only.	Y	Y	2	No exam	---	Prof W K Li, Statistics and Actuarial Science
STAT3810	Risk theory	6	Pass in STAT2803, or already enrolled in this course; or Pass in STAT2303 or MATH2603	Y	Y	2	May	---	Dr K C Cheung, Statistics and Actuarial Science
STAT3811	Survival analysis	6	Pass in STAT2802, or already enrolled in this course; or Pass in STAT2301 or STAT2801	Y	Y	2	May	---	Dr E K F Lam, Statistics and Actuarial Science
STAT3819	Project in statistics and actuarial science	6	For BSc(Actuarial Science) students only.	Y	Y	0	No exam	---	Prof S M S Lee, Statistics and Actuarial Science
STAT3820	Pension Funds and Pension Mathematics	6	Pass in STAT3801; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec	---	Dr G Ma, Statistics and Actuarial Science
STAT3821	Financial economics II	6	Pass in MATH2603 or STAT2803 or STAT2806 or STAT2812 or STAT3316	Y	Y	2	May	---	Dr E C K Cheung, Statistics and Actuarial Science
STAT3822	Risk Theory II	6	Pass in STAT3810	Y	Y	1	Dec	---	Dr J K Woo, Statistics and Actuarial Science

\* As the 1st semester of 2012-13 will be shortened to cater for the double cohorts of UG freshmen, the teaching and learning activities for 1st semester courses will be adjusted accordingly. Assessment methods and weighting may also be adjusted which would be announced by the teachers at class. Written examination (if any) may be extended beyond the Xmas and the New Year holidays, up to January 5, 2013 if necessary.

SECTION III BSc(ActuarSc) Programmes on offer in 2012/13

Programme Title BSc in Actuarial Science

Offered to students **2012-2013**  
admitted to Year 1 in

**Objectives:**

The Actuarial Science curriculum at The University of Hong Kong aims at providing formal academic and professional training to students who wish to join the actuarial profession. Although actuarial science is a separate discipline with its own area of knowledge, modern actuarial training requires multidisciplinary knowledge such as probability, statistics, economics, investment, finance, law, taxation, and accounting. The Actuarial Science curriculum reflects this by incorporating various interdisciplinary courses into the basic actuarial training. The programme is set up to equip students with solid background in actuarial science, to develop their confidence and analytical skills to define and tackle problems in actuarial science and other related fields. Specifically, the programme is designed to provide adequate knowledge for students to sit for the early professional examinations organized by international actuarial organizations so that they can successfully join the actuarial profession after graduation. In addition, the programme provides enough academic training for students who wish to pursue postgraduate studies in actuarial science or other related areas.

**Learning Outcomes:**

Students would be able to:

- a. understand and apply various analytic and quantitative methods to define and solve problems in insurance, finance, economics, investment, pension, financial risk management and demography;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- b. understand and identify the nature of insurance, finance and investment risks;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- c. develop analytical skills to evaluate and measure various kinds of risk;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- d. formulate effective business strategies to manage them;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- e. pass the early professional examinations organized by international actuarial organizations;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- f. pursue postgraduate studies in actuarial science or other related fields;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- g. discuss current actuarial issues and acquire and apply practical knowledge in some specially designed courses;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

In addition, some students can join our internship programme to gain work experience before graduation.  
(by means of internship in the curriculum)

**Required courses (180 credits)****1. Year I Courses (60 credits)**

Core (Introductory level) courses (48 credits):

STAT1801 Probability and statistics: foundations of actuarial science 6  
 STAT1802 Financial mathematics 6  
 BUSI1002 Introduction to accounting 6  
 CSIS1117 Computer programming I 6  
 MATH1813 Mathematical methods for actuarial science 6  
 ECON1001 Introduction to economics I 6  
 ECON1002 Introduction to economics II 6  
 FINA1003 Corporate finance 6

Language and Common Core Courses (12 credits):

CSCI0001 Practical Chinese language course for science students 3  
 CAES1801 Academic English for science students 3  
 Common Core Course 6

**2. Year II Courses (60 credits) (note 1)**

Core (Advanced level) courses (48 credits):

STAT2801 Life contingencies 6  
 STAT2802 Statistical models 6  
 STAT2803 Stochastic models 6  
 STAT2804 Linear models and forecasting 6  
 STAT2820 Introduction to financial derivatives 6  
 STAT3801 Advanced life contingencies 6  
 STAT3810 Risk theory 6  
 Any advanced level course selected from Inter/Intra Faculty Courses 6

Language, Common Core and Elective Courses (12 credits):

CAES2802 Advanced English for science students 3  
 Common Core Course 6  
 Any level course selected from Inter/Intra Faculty Courses 3

### 3. Year III Courses (60 credits) (note 1)

Core (advanced level) courses (48 credits):

STAT2805 Credibility theory and loss distributions 6  
 STAT2812 Financial economics I 6  
 STAT3322 Market risk analysis 6  
 STAT3811 Survival analysis 6  
 STAT3821 Financial economics II 6

Plus

18 credits from the following courses:

STAT2302 Statistical inference 6  
 STAT2306 Business logistics 6  
 STAT2312 Data mining 6  
 STAT2316 Advanced SAS programming 6  
 STAT3302 Multivariate data analysis 6  
 STAT3306 Selected topics in statistics 6  
 STAT3320 Risk management and Basel Accords in banking and finance 6  
 STAT3321 Credit risk analysis 6  
 STAT3802 Advanced contingencies 6  
 STAT3806 Investment and asset management 6  
 STAT3807 Fundamentals of actuarial practice 6  
 STAT3809 Current topics in actuarial science 6  
 STAT3819 Project in statistics and actuarial science 6  
 STAT3820 Pension funds and pension mathematics 6

Elective courses (12 credits):

Any advanced level course selected from Inter/Intra Faculty Courses 12

#### Notes:

1 Special arrangements for students who take on 6-month (or longer) Full-time Internships:

- a. Students should be in full-time status for at least six academic semesters in addition to their internships in order to fulfill the degree requirements.
- b. Students should take STAT2813 (Internship in actuarial science) after they come back from internships, and follow the special arrangements specified in the tables below. They should follow these arrangements completely. Special approval will not be granted to any kind of violation.
- c. Special attention should be paid if students intend to take on full-time internships in the 2nd semester of Year 2 (2nd semester of Year 3 respectively). They have to take the courses specified in the table during the 1st semester of Year 2 (1st semester of Year 3 respectively) before leaving for internships. It is the students' responsibility to ensure that these requirements are fulfilled prior to leaving for internships.

Details of the table will be provided in 2013-2014.

#### Remarks:

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

Programme Title BSc in Actuarial Science

Offered to students 2011-2012  
admitted to Year 1 in

**Objectives:**

The Actuarial Science curriculum at the University of Hong Kong aims at providing formal academic and professional training to students who wish to join the actuarial profession. Although actuarial science is a separate discipline with its own area of knowledge, modern actuarial training requires multidisciplinary knowledge such as probability, statistics, economics, investment, finance, law, taxation, and accounting. The Actuarial Science curriculum reflects this by incorporating various interdisciplinary courses into the basic actuarial training. The programme is set up to equip students with solid background in actuarial science, to develop their confidence and analytical skills to define and tackle problems in actuarial science and other related fields. Specifically, the programme is designed to provide adequate knowledge for students to sit for the early professional examinations organized by international actuarial organizations so that they can successfully join the actuarial profession after graduation. In addition, the programme provides enough academic training for students who wish to pursue postgraduate studies in actuarial science or other related areas.

**Learning Outcomes:**

Students would be able to:

- a. understand and apply various analytic and quantitative methods to define and solve problems in insurance, finance, economics, investment, pension, financial risk management and demography;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- b. understand and identify the nature of insurance, finance and investment risks;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- c. develop analytical skills to evaluate and measure various kinds of risk;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- d. formulate effective business strategies to manage them;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- e. pass the early professional examinations organized by international actuarial organizations;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- f. pursue postgraduate studies in actuarial science or other related fields;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- g. discuss current actuarial issues and acquire and apply practical knowledge in some specially designed courses;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

In addition, some students can join our internship programme to gain work experience before graduation.  
(by means of internship in the curriculum)

**Required courses (180 credits)**

**1. Year I Courses (60 credits)**

Core (Introductory level) courses (48 credits):

STAT1801 Probability and statistics: foundations of actuarial science 6  
STAT1802 Financial mathematics 6  
BUSI1002 Introduction to accounting 6  
CSIS1117 Computer programming I 6  
MATH1813 Mathematical methods for actuarial science 6  
ECON1001 Introduction to economics I 6  
ECON1002 Introduction to economics II 6  
FINA1003 Corporate finance 6

Language and Common Core Courses (12 credits):

CSCI0001 Practical Chinese language course for science students 3  
CAES1801 Academic English for science students 3  
Common Core Course 6

**2. Year II Courses (60 credits) (note 1)**

Core (Advanced level) courses (48 credits):

STAT2801 Life contingencies 6  
 STAT2802 Statistical models 6  
 STAT2803 Stochastic models 6  
 STAT2804 Linear models and forecasting 6  
 STAT2820 Introduction to financial derivatives 6  
 STAT3801 Advanced life contingencies 6  
 STAT3810 Risk theory 6  
 Any advanced level course selected from Inter/Intra Faculty Courses 6

Language, Common Core and Elective Courses (12 credits):

CAES2802 Advanced English for science students 3  
 Common Core Course 6  
 Any level course selected from Inter/Intra Faculty Courses 3

### 3. Year III Courses (60 credits) (note 1)

Core (advanced level) courses (48 credits):

STAT2805 Credibility theory and loss distributions 6  
 STAT2812 Financial economics I 6  
 STAT3322 Market risk analysis 6  
 STAT3811 Survival analysis 6  
 STAT3821 Financial economics II 6

Plus

18 credits from the following courses:

STAT2302 Statistical inference 6  
 STAT2306 Business logistics 6  
 STAT2312 Data mining 6  
 STAT3302 Multivariate data analysis 6  
 STAT3304 Computer-aided statistical modelling 6  
 STAT3306 Selected topics in statistics 6  
 STAT3316 Advanced probability 6  
 STAT3320 Risk management and Basel Accords in banking and finance 6  
 STAT3321 Credit risk analysis 6  
 STAT3802 Advanced contingencies 6  
 STAT3806 Investment and asset management 6  
 STAT3807 Fundamentals of actuarial practice 6  
 STAT3809 Current topics in actuarial science 6  
 STAT3819 Project in statistics and actuarial science 6  
 STAT3820 Pension funds and pension mathematics 6

Elective courses (12 credits):

Any advanced level course selected from Inter/Intra Faculty Courses 12

#### Notes:

1 Special arrangements for students who take on 6-month (or longer) full-time internships:

- a. Students should be in full-time status for at least six academic semesters in addition to their internships in order to fulfill the degree requirements.
- b. Students should take STAT2813 (Internship in actuarial science) after they come back from internships, and follow the special arrangements specified below completely. Special approval will not be granted to any kind of violation.
- c. Please pay special attention that if students intend to take on full-time internships in the 2nd semester of Year 2 or 2nd semester of Year 3, they have to take the courses specified in the table during the 1st semester of Year 2 or 1st semester of Year 3 respectively before leaving for internships. It is the students' responsibility to ensure that these requirements are fulfilled prior to internships.

(A) Period of internship: 1st semester of Year 2 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 2, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- STAT3322 Market risk analysis (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of Common Core course (Yr 2)
- 3 credits of any level course selected from Inter/Intra Faculty courses (Yr 2)
- CAES2802 Advanced English for Science students (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2812 Financial economics I (Yr 3) - special approval is needed to take the course since the pre-requisite (STAT1302 or STAT2802) is not met
- STAT2820 Introduction to financial derivatives (Yr 2)

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3811 Survival Analysis (Yr 3)
- STAT3821 Financial economics II (Yr 3)

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3) - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(B) Period of internship: 2nd semester of Year 2 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 2 (before taking on internships), students should take 30 credits of the following courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2820 Introduction to financial derivatives (Yr 2)
- 6 credits of Common Core course (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of course selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

In the 2nd semester of Year 3, students should take 33 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3322 Market risk analysis (Yr 3)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3821 Financial economics II (Yr 3)
- CAES2802 Advanced English for Science students (Yr 2)

In the 1st semester of Year 4, students should take 27 credits of the following courses:

- STAT2306 Business logistics (Yr 3) OR STAT3807 Fundamentals of actuarial practice (Yr 3) - to replace STAT3811 Survival analysis (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 12 credits of course(s) selected from the list of Core-Elective courses specified in the original final year of study

(Yr 3)

- 3 credits of any level course selected from Inter/Intra Faculty courses (Yr 2)

(C) Period of internship: 1st semester of Year 3 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- STAT3322 Market risk analysis (Yr 3)
- STAT3811 Survival Analysis (Yr 3)
- STAT3821 Financial economics II (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3) - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(D) Period of internship: 2nd semester of Year 3 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 3 (before taking on internships), students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- 18 credits - to partially fulfill the requirements of 12 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3), and 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

In 1st semester of the Year 4, students should take 30 credits of the following courses:

- STAT2306 Business Logistics (Yr 3)
  - STAT2813 Internship in Actuarial Science (Yr 2/3)
  - STAT3807 Fundamentals of Actuarial Practice (Yr 3)
- (The above 3 courses are to replace STAT3811, STAT3821 & STAT3322.)
- 12 credits - to complete the requirements of 12 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3), and 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

**Remarks:**

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



Core (Advanced level) courses (48 credits):

STAT2801 Life contingencies 6  
 STAT2802 Statistical models 6  
 STAT2803 Stochastic models 6  
 STAT2804 Linear models and forecasting 6  
 STAT2820 Introduction to financial derivatives 6  
 STAT3801 Advanced life contingencies 6  
 STAT3810 Risk theory 6  
 Any advanced level course selected from Inter/Intra Faculty Courses 6

Language, Common Core and Elective Courses (12 credits):

CAES2802 Advanced English for science students 3  
 Common Core Course 6  
 Any level course selected from Inter/Intra Faculty Courses 3

### 3. Year III Courses (60 credits) (note 1)

Core (advanced level) courses (48 credits):

STAT2805 Credibility theory and loss distributions 6  
 STAT2812 Financial economics I 6  
 STAT3322 Market risk analysis 6  
 STAT3811 Survival analysis 6  
 STAT3821 Financial economics II 6

Plus

18 credits from the following courses:

STAT2302 Statistical inference 6  
 STAT2306 Business logistics 6  
 STAT2312 Data mining 6  
 STAT3302 Multivariate data analysis 6  
 STAT3304 Computer-aided statistical modelling 6  
 STAT3306 Selected topics in statistics 6  
 STAT3316 Advanced probability 6  
 STAT3320 Risk management and Basel Accords in banking and finance 6  
 STAT3321 Credit risk analysis 6  
 STAT3802 Advanced contingencies 6  
 STAT3806 Investment and asset management 6  
 STAT3807 Fundamentals of actuarial practice 6  
 STAT3809 Current topics in actuarial science 6  
 STAT3819 Project in statistics and actuarial science 6  
 STAT3820 Pension funds and pension mathematics 6

Elective courses (12 credits):

Any advanced level course selected from Inter/Intra Faculty Courses 12

#### Notes:

1 Special arrangements for students who take on 6-month (or longer) Full-time Internships:

- Students should be in full-time status for at least six academic semesters in addition to their internships in order to fulfill the degree requirements.
- Students should take STAT2813 (Internship in actuarial science) after they come back from internships, and follow the special arrangements specified in the tables below. They should follow these arrangements completely. Special approval will not be granted to any kind of violation.
- Special attention should be paid if students intend to take on full-time internships in the 2nd semester of Year 2 (2nd semester of Year 3 respectively). They have to take the courses specified in the table during the 1st semester of Year 2 (1st semester of Year 3 respectively) before leaving for internships. It is the students' responsibility to ensure that these requirements are fulfilled prior to leaving for internships.

(A) Period of internship: 1st semester of Year 2 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 2, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- STAT3322 Market risk analysis (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of Common Core course (Yr 2)
- 3 credits of any level course selected from Inter/Intra Faculty courses (Yr 2)
- CAES2802/ECEN2802 Advanced English for Science students (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2812 Financial economics I (Yr 3) - special approval is needed to take the course since the pre-requisite (STAT1302 or STAT2802) is not met
- STAT2820 Introduction to financial derivatives (Yr 2)

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3811 Survival Analysis (Yr 3)
- STAT3821 Financial economics II (Yr 3)

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3) - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(B) Period of internship: 2nd semester of Year 2 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 2 (before taking on internships), students should take 30 credits of the following courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2820 Introduction to financial derivatives (Yr 2)
- 6 credits of Common Core course (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 6 credits of course selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

In the 2nd semester of Year 3, students should take 33 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3322 Market risk analysis (Yr 3)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3821 Financial economics II (Yr 3)
- CAES2802/ECEN2802 Advanced English for Science students (Yr 2)

In the 1st semester of Year 4, students should take 27 credits of the following courses:

- STAT2306 Business logistics (Yr 3) OR STAT3807 Fundamentals of actuarial practice (Yr 3) - to replace STAT3811 Survival analysis (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- 12 credits of course(s) selected from the list of Core-Elective courses specified in the original final year of study

(Yr 3)

- 3 credits of any level course selected from Inter/Intra Faculty courses (Yr 2)

(C) Period of internship: 1st semester of Year 3 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)
- STAT3322 Market risk analysis (Yr 3)
- STAT3811 Survival Analysis (Yr 3)
- STAT3821 Financial economics II (Yr 3)
- 6 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3)

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3) - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(D) Period of internship: 2nd semester of Year 3 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 3 (before taking on internships), students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- 18 credits - to partially fulfill the requirements of 12 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3), and 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

In 1st semester of the Year 4, students should take 30 credits of the following courses:

- STAT2306 Business Logistics (Yr 3)
  - STAT2813 Internship in Actuarial Science (Yr 2/3)
  - STAT3807 Fundamentals of Actuarial Practice (Yr 3)
- (The above 3 courses are to replace STAT3811, STAT3821 & STAT3322.)
- 12 credits - to partially fulfill the requirements of 12 credits of any advanced level course(s) selected from Inter/Intra Faculty courses (Yr 2/3), and 18 credits of courses selected from the list of Core-Elective courses specified in the original final year of study (Yr 3)

**Remarks:**

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

Programme Title BSc in Actuarial Science

Offered to students 2009-2010  
admitted to Year 1 in

**Objectives:**

The Actuarial Science curriculum at the University of Hong Kong aims at providing formal academic and professional training to students who wish to join the actuarial profession. Although actuarial science is a separate discipline with its own area of knowledge, modern actuarial training requires multidisciplinary knowledge such as probability, statistics, economics, investment, finance, law, taxation, and accounting. The Actuarial Science curriculum reflects this by incorporating various interdisciplinary courses into the basic actuarial training. The programme is set up to equip students with solid background in actuarial science, to develop their confidence and analytical skills to define and tackle problems in actuarial science and other related fields. Specifically, the programme is designed to provide adequate knowledge for students to sit for the early professional examinations organized by international actuarial organizations so that they can successfully join the actuarial profession after graduation. In addition, the programme provides enough academic training for students who wish to pursue postgraduate studies in actuarial science or other related areas.

**Learning Outcomes:**

Students would be able to:

- a. understand and apply various analytic and quantitative methods to define and solve problems in insurance, finance, economics, investment, pension, financial risk management and demography;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- b. understand and identify the nature of insurance, finance and investment risks;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- c. develop analytical skills to evaluate and measure various kinds of risk;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- d. formulate effective business strategies to manage them;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- e. pass the early professional examinations organized by international actuarial organizations;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- f. pursue postgraduate studies in actuarial science or other related fields;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
- g. discuss current actuarial issues and acquire and apply practical knowledge in some specially designed courses;  
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

In addition, some students can join our internship programme to gain work experience before graduation.  
(by means of internship in the curriculum)

**Required courses (180 credits)**

**1. Year I Courses (60 credits)**

Core (Introductory level) courses (48 credits):

STAT1801 Probability and statistics: foundations of actuarial science 6  
 STAT1802 Financial mathematics 6  
 BUSI1002 Introduction to accounting 6  
 CSIS1117 Computer programming I 6  
 MATH1813 Mathematical methods for actuarial science 6  
 ECON1001 Introduction to economics I 6  
 ECON1002 Introduction to economics II 6  
 Any 6-credit introductory course 6

General Education / Broadening courses (12 credits):

CSCI0001 Practical Chinese language course for science students 3  
 CAES1801/ECEN1801 Academic English for science students 3  
 One 3-credit course selected from "Humanities and Social Sciences studies" 3  
 One 3-credit course selected from "Culture and Value Studies" or any Inter-faculty Electives Course outside BSC(ActuarSc) Syllabus 3

**2. Year II Courses (60 credits) (note 1)**

Core (Advanced level) courses (48 credits):

STAT2801 Life contingencies 6  
 STAT2802 Statistical models 6  
 STAT2803 Stochastic models 6  
 STAT2804 Linear models and forecasting 6  
 STAT2820 Introduction to financial derivatives 6  
 STAT3801 Advanced life contingencies 6  
 STAT3810 Risk theory 6

Plus

6 credits from the following courses (List B):

BUSI0019 Intermediate accounting I 6  
 BUSI0020 Intermediate accounting II 6  
 ECON2101 Microeconomic theory 6  
 ECON2102 Macroeconomic theory 6  
 ECON2113 Microeconomic analysis 6  
 ECON2114 Macroeconomic analysis 6  
 FINA0102 Financial markets and institutions 6  
 FINA0304 Advanced corporate finance 6  
 MATH2303 Matrix theory and its applications 6  
 MATH2601 Numerical analysis 6  
 STAT2807 Corporate finance for actuarial science 6  
 Any other course approved by the Department of Statistics and Actuarial Science

General Education / Broadening courses (12 credits):

CAES2802/ECEN2802 Advanced English for science students 3  
 9 credits of any Broadening/Inter/Intra Faculty Courses 9

**3. Year III Courses (60 credits) (note 1)**

Core (advanced level) courses (54 credits):

STAT2805 Credibility theory and loss distributions 6  
 STAT2812 Financial economics I 6  
 STAT3322 Market risk analysis 6  
 STAT3811 Survival analysis 6  
 STAT3821 Financial economics II 6

Plus

18 credits from the following courses (List C):

STAT2302 Statistical inference 6  
 STAT2306 Business logistics 6  
 STAT2312 Data mining 6  
 STAT3302 Multivariate data analysis 6  
 STAT3304 Computer-aided statistical modelling 6  
 STAT3306 Selected topics in statistics 6  
 STAT3316 Advanced probability 6  
 STAT3320 Risk management and Basel Accords in banking and finance 6  
 STAT3321 Credit risk analysis 6  
 STAT3802 Advanced contingencies 6  
 STAT3806 Investment and asset management 6  
 STAT3807 Fundamentals of actuarial practice 6  
 STAT3809 Current topics in actuarial science 6  
 STAT3819 Project in statistics and actuarial science 6  
 STAT3820 Pension funds and pension mathematics 6

Plus

6 credits from the following courses (List B):

BUSI0019 Intermediate accounting I 6  
 BUSI0020 Intermediate accounting II 6  
 ECON2101 Microeconomic theory 6  
 ECON2102 Macroeconomic theory 6  
 ECON2113 Microeconomic analysis 6

ECON2114 Macroeconomic analysis 6  
 FINA0102 Financial markets and institutions 6  
 FINA0304 Advanced corporate finance 6  
 MATH2303 Matrix theory and its applications 6  
 MATH2601 Numerical analysis 6  
 STAT2807 Corporate finance for actuarial science 6  
 Any other course approved by the Department of Statistics and Actuarial Science

Elective courses (6 credits):

Any advanced level course selected from Inter/Intra Faculty Courses 6

**Notes:**

1 Special arrangements for students who take on 6-month (or longer) Full-time Internships:

a. Students should be in full-time status for at least six academic semesters in addition to their internships in order to fulfill the degree requirements.

b. Students should take STAT2813 (Internship in actuarial science) after they come back from internships, and follow the special arrangements specified in the tables below. They should follow these arrangements completely. Special approval will not be granted to any kind of violation.

c. Special attention should be paid if students intend to take on full-time internships in the 2nd semester of Year 2 (2nd semester of Year 3 respectively). They have to take the courses specified in the table during the 1st semester of Year 2 (1st semester of Year 3 respectively) before leaving for internships. It is the students' responsibility to ensure that these requirements are fulfilled prior to leaving for internships.

(A) Period of internship: 1st semester of Year 2 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 2, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace any 6-credit advanced level course selected from Inter/Intra Faculty courses (Yr 3)
- STAT3322 Market risk analysis (Yr 3)
- 6 credits from List B (Yr 2/3)
- 12 credits from General Education/Broadening courses (note 2), including CAES2802/ECEN2802 (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2812 Financial economics I (Yr 3) - special approval is needed to take the course since the pre-requisite (STAT1302 or STAT2802) is not met
- STAT2820 Introduction to financial derivatives (Yr 2)

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3811 Survival Analysis (Yr 3)
- STAT3821 Financial economics II (Yr 3)

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- 6 credits from List B (Yr 2/3)
- 18 credits from List C (Yr 3) - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(B) Period of internship: 2nd semester of Year 2 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 2 (before taking on internships), students should take 30 credits of the following

courses:

- STAT2801 Life Contingencies (Yr 2)
- STAT2802 Statistical Models (Yr 2)
- STAT2803 Stochastic Models (Yr 2)
- STAT2820 Introduction to financial derivatives (Yr 2)
- 6 credits from General Education/Broadening courses (note 2) (Yr 2)

In the 1st semester of Year 3, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions (Yr 3)
- STAT2812 Financial economics I (Yr 3)
- STAT2813 Internship in Actuarial Science (Yr 2/3) - to replace any 6-credit advanced level course selected from Inter/Intra Faculty courses (Yr 3)
- 6 credits from List B (Yr 2/3)
- 6 credits from List C (Yr 3)

In the 2nd semester of Year 3, students should take 33 credits of the following courses:

- STAT2804 Linear models and forecasting (Yr 2)
- STAT3322 Market risk analysis (Yr 3)
- STAT3801 Advanced life contingencies (Yr 2)
- STAT3810 Risk theory (Yr 2)
- STAT3821 Financial economics II (Yr 3)
- CAES2802/ECEN2802 Advanced English for Science students (Yr 2)

In the 1st semester of Year 4, students should take 27 credits of the following courses:

- STAT2306 Business logistics (Yr 3) OR STAT3807 Fundamentals of actuarial practice (Yr 3) - to replace STAT3811 Survival analysis (Yr 3)
- 6 credits from List B (Yr 2/3)
- Another 12 credits from List C (Yr 3)
- 3 credits from General Education/Broadening courses (Yr 2)

(C) Period of internship: 1st semester of Year 3 (leave of absence)

Pre-defined courses to be taken after internship:

In the 2nd semester of Year 3, students should take 30 credits of the following courses:

- STAT2813 Internship in Actuarial Science - to replace any 6-credit advanced level course selected from Inter/Intra Faculty courses
- STAT3322 Market risk analysis
- STAT3811 Survival Analysis
- STAT3821 Financial economics II
- 6 credits from List B

In the 1st semester of Year 4, students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions
- STAT2812 Financial economics I
- 18 credits from List C - 6 out of these 18 credits may be taken in the 2nd semester of Year 3

(D) Period of internship: 2nd semester of Year 3 (leave of absence)

Pre-defined courses to be taken before / after internship:

In the 1st semester of Year 3 (before taking on internships), students should take 30 credits of the following courses:

- STAT2805 Credibility Theory and Loss Distributions
- STAT2812 Financial economics I
- 18 credits - to partially fulfill the requirements of 6 credits from List B, 18 credits from List C and any 6-credit advanced level course selected from Inter/Intra Faculty courses, specified in the original final year of study

In 1st semester of the Year 4, students should take 30 credits of the following courses:

- STAT2306 Business Logistics

- STAT2813 Internship in Actuarial Science
- STAT3807 Fundamentals of Actuarial Practice

(The above 3 courses are to replace STAT3811, STAT3821 & STAT3322.)

- 12 credits - to fulfill the requirements of 6 credits from List B, 18 credits from List C and any 6-credit advanced level course selected from Inter/Intra Faculty courses, specified in the original final year of study

2 including (i) one 3-credit course selected from "Humanities and Social Sciences studies" and (ii) one 3-credit course selected from "Culture and Value Studies" or any Inter-faculty Electives Course outside BSc(ActuarSc) Syllabus.

**Remarks:**

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

## SECTION IV Course Descriptions

<b>STAT1801 Probability and statistics: foundations of actuarial science (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr Y K Chung, Statistics and Actuarial Science												
<b>Course Aim</b>	The purpose of this course is to develop knowledge of the fundamental tools in probability and statistics for quantitatively assessing risk. Applications of these tools to actuarial science problems will be emphasized. Students will have a thorough command of probability topics and the supporting calculations.												
<b>Course Contents</b>	<p>1. General Probability</p> <ul style="list-style-type: none"> <li>- Basic elements of probability in set notation</li> <li>- Mutually exclusive events</li> <li>- Addition and multiplication rules</li> <li>- Independence of events</li> <li>- Combinatorial probability</li> <li>- Conditional probability and expectations</li> <li>- Bayes Theorem / Law of total probability</li> <li>- Random variables</li> </ul> <p>2. Univariate probability distributions (including binomial, negative binomial, geometric, hypergeometric, Poisson, uniform, exponential, chi-square, beta, Pareto, lognormal, gamma, Weibull and normal) and bivariate normal distribution</p> <ul style="list-style-type: none"> <li>- Probability functions and probability density functions</li> <li>- Cumulative distribution functions</li> <li>- Mode, median, percentiles and moments</li> <li>- Variance and measures of dispersion</li> <li>- Central Limit Theorem</li> </ul> <p>3. Sampling distributions and introduction of estimation</p>												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- understand the mathematical theory underlying the modern practice of statistics</li> <li>- develop skills in probabilistic analysis for problems involving randomness</li> <li>- apply techniques in probability and statistics to solve actuarial science problems</li> </ul>												
<b>Pre-requisites</b>	(E or above in AL Pure Math or AS Math & Stat; or (Pass in MATH1813, or already enrolled in this course); and Not for students who have passed or enrolled in any of these courses: STAT0301, STAT0302, STAT1301, STAT1306.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials, and a class test												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.												
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.												
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.												
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.												
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.												
<b>Textbooks</b>	I. Miller & M. Miller: John E. Freund's Mathematical Statistics with applications (Pearson Education International, 2004, 7th edition)												
<b>References</b>	<p>M. A. Bean: Probability: The Science of Uncertainty with Applications to Investments, Insurance, and Engineering (Brooks/Cole, Thomas Learning)</p> <p>S. Ghahramani: Fundamentals of Probability, with Stochastic Processes (2005, 3rd edition)</p> <p>M. Hassett &amp; D. Stewart: Probability for Risk Management (2006, 2nd edition)</p> <p>S. M. Ross: A First Course in Probability (2005, 7th edition)</p>												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	Other References: D. Wackerly, W. Mendenhall III & R. Scheaffer: Mathematical Statistics with Applications (2008, 7th edition)												

<b>STAT1802 Financial mathematics (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof K C Yuen, Statistics and Actuarial Science												
<b>Course Aim</b>	This course introduces the fundamental concepts of financial mathematics which plays an important role in the development of basic actuarial techniques. Practical applications of these concepts are also covered.												
<b>Course Contents</b>	Key topics include: measurement of interest, annuities certain; discounted cash flow analysis; yield rates; amortization schedules and sinking funds; bonds and related securities; practical applications such as real estate mortgage and short sales; stochastic approaches to interest; and key terms of financial analysis such as yield curves, spot rates, forward rates, duration, convexity, and immunization.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- understand the fundamental concepts of financial mathematics.</li> <li>- learn standard actuarial notations for a variety of annuities.</li> <li>- do simple discounted cashflow analysis using basic annuities.</li> <li>- learn the operations of some commonly-encountered financial instruments such as bonds, mortgages, short sales, and so on.</li> <li>- quote interest in various modes and determine interest rate based on a series of financial transactions.</li> <li>- deal with Exam FM of the Society of Actuaries.</li> </ul>												
<b>Pre-requisites</b>	(E or above in AL Pure Math or AS Math & Stat); and (Pass in STAT1302, or already enrolled in this course; or Pass in STAT1801, or already enrolled in this course); and Not for students who have passed in STAT2315, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and class tests												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>Textbooks</b>	Kellison, S. G.: The Theory of Interest (Irwin: Illinois, 2008, 3rd edition)												
<b>References</b>	Broverman, S. A.: Mathematics of Investment and Credit (ACTEX Publications - Mad River Books: Connecticut, 2004, 3rd edition)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2302 Statistical inference (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof S M S Lee, Statistics and Actuarial Science												
<b>Course Aim</b>	This course covers the advanced theory of point estimation, interval estimation and hypothesis testing. Using a mathematically-oriented approach, the course provides a solid and rigorous treatment of inferential problems, statistical methodologies and the underlying concepts and theory. It is suitable in particular for students intending to further their studies or to develop a career in statistical research.												
<b>Course Contents</b>	<ol style="list-style-type: none"> <li>1. Paradigms of inference: frequentist, Bayesian, Fisherian.</li> <li>2. Decision theory: loss function; risk; decision rule; admissibility; minimaxity; unbiasedness; Bayes' rule.</li> <li>3. Estimation theory: exponential families; likelihood; sufficiency; minimal sufficiency; ancillarity; completeness; UMVU estimators; information inequality; large-sample theory of maximum likelihood estimation.</li> <li>4. Hypothesis testing: uniformly most powerful test; monotone likelihood ratio; unbiasedness; UMP unbiased test; maximal invariants; most powerful invariant test; large-sample theory of likelihood ratio.</li> </ol>												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- form a panoramic view of classical developments in mathematical statistics;</li> <li>- gain thorough insight into the essentials of statistical inference;</li> <li>- build a solid foundation for future research studies in statistics and related areas.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT1302 or STAT2802												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	<p>Berry, D. A. &amp; Lindgren, B. W.: Statistics: Theory and Methods (Duxbury, Belmont, 1996)  Bickel, P. J. &amp; Doksum, K. A.: Mathematical Statistics: Basic Ideas and Selected Topics, Vol. 1 (Prentice Hall, Upper Saddle River, N.J., 2001)  Freund, J. E.: Mathematical Statistics (Prentice Hall, Englewood Cliffs, N.J., 1992)  Hogg, R. V. &amp; Craig, A. T.: Introduction to Mathematical Statistics (Macmillan, New York, 1989)  Pace, L. &amp; Salvan, A.: Principles of Statistical Inference: from a neo-Fisherian perspective (World Scientific: Singapore, 1997).  Young, G.A. &amp; Smith, R.L.: Essentials of Statistical Inference (Cambridge University Press: Cambridge, 2005).</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2306 Business logistics (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Ms O T K Choi, Statistics and Actuarial Science												
<b>Course Aim</b>	Modern business corporations are increasingly using logistics as a management tool, for example, in capital budgeting problems, production planning, scheduling, transportations and deciding a location for a new factory. This course addresses the business applications of logistics.												
<b>Course Contents</b>	In this course, students will apply the analytical skills with aid of computer techniques in solving the business logistic problems. Topics include optimization techniques applied in allocation of resources, financial planning, transportation, assignment, inventory control and queuing problems.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Solve linear programming with Graphical approach, Simplex method and hands-on Excel Solving function</li> <li>- Set-up and solve network flow problems using least-cost approach, MODI method and Vogel's approximation</li> <li>- Understand decision theory and its applications</li> <li>- Evaluate the cost and effectiveness of service systems</li> </ul>												
<b>Pre-requisites</b>	Pass in BIOL1608 or BIOL2608 or ECON1003 or STAT0301 or STAT0302 or STAT1301 or STAT1306 or STAT1801; and Not for students who have passed MATH2901, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (75% weighting) and a coursework (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	B. Render, R. Stair, M. Hanna: Quantitative Analysis for Management, 10th edition, Pearson Wayne L. Winston: Operations Research, 4th edition, Thomson Learning H. Taha: An Introduction to Operations Research, 8th edition, Pearson International Edition F.S. Hillier and G, J. Lieberman: An Introduction to Operations Research Robert F.V. Anderson, Holt, Rinehart and Winston: Introduction to Linear Algebra												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2312 Data mining (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	48										
<b>Course Co-ordinator</b>	Dr G C S Lui, Statistics and Actuarial Science												
<b>Course Aim</b>	With an explosion in information technology in the past decade, vast amounts of data appear in a variety of fields such as finance, customer relations management and medicine. 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.												
<b>Course Contents</b>	Data pre-processing, association rules, classification and regression trees, neural networks and cluster analysis.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - implement data mining process summarized in the acronym SEMMA which stands for sampling, exploring, modifying, modeling, and assessing data. - understand and apply a wide range of data mining techniques, and recognize their characteristics, strengths and weaknesses. - be proficient with the leading data mining software---SAS Enterprise Miner. - identify and use appropriate data mining techniques for a data mining project, taking into account both the nature of the data to be mined and the goals of the user of the discovered knowledge. - evaluate the quality of discovered knowledge, taking into account the requirements of the data mining task being solved and the goals of the user.												
<b>Pre-requisites</b>	Pass in STAT1302 or STAT1306 or STAT2802 (Any student who has already passed in BIOL1608 or BIOL2608 or ECON1003 or STAT0301 or STAT0302 or STAT1301 or STAT1801 in 2009-10 or before can still apply for the course in 2012-2013.)												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	No Exam										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 computer lab sessions.												
<b>Assessment Method</b>	100% coursework assessment (30% assignments, 40% tests and 30% group project)												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1"> <tr> <td>A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td>B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td>C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td>D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td>Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>References</b>	Tan, P. N., Steinback, M. and Kumar, V.: Introduction to Data Mining (Addison Wesley, 2006) T. Hastie, R. Tibshirani, & J. Friedman: The Elements of Statistical Learning: Data Mining, Inference, and Prediction (Springer, New York, 2008, 2nd edition) M. Kantardzic: Data Mining: Concepts, Models, Methods, and Algorithms (Wiley, 2003) A. Webb: Statistical Pattern Recognition (Wiley, 2002, 2nd edition) Shmueli, G., Patel, N.R. & Bruce, P.C.: Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner (Wiley, 2010, 2nd edition) J. Han & M. Kamber: Data Mining: Concepts and Techniques (Morgan Kaufmann, 2006, 2nd edition) Larose, D. T.: Discovering Knowledge in Data: An Introduction to Data Mining (Wiley, 2005)												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	Other references: M. J. A. Berry & G. S. Linoff: Data Mining Techniques: For Marketing, Sales and Customer Relationship Management (Wiley, 2011, 3rd edition) Larose, D. T.: Data Mining: Methods and Models (Wiley, 2006)												

<b>STAT2316 Advanced SAS programming (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	96										
<b>Course Co-ordinator</b>	TBC, Statistics and Actuarial Science												
<b>Course Aim</b>	This course aims to equip students, who have taken STAT26xx, with a high level of proficiency in SAS programming for automation of procedures and data processing in solving complex problems more efficiently.												
<b>Course Contents</b>	Accessing data using SQL. Macro programming. Advanced programming techniques including data simulation, advanced data look-up techniques, modifying transaction datasets and controlling I/O processing and memory.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- apply SAS SQL to access data to perform queries</li> <li>- use advanced SAS programming statements and techniques to solve complex problems</li> <li>- use the BY statement for parallel processing to aid automation</li> <li>- use the output dataset without printing to OUTPUT windows for piping idea in automation</li> <li>- use SAS MACRO to develop customized and automated applications.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT1303												
<b>Offer in 2012 - 2013</b>	Not offered	<b>Examination</b>	To be confirmed										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (50% weighting) and a coursework assessment (50% weighting) based on assignments, tutorials and class test(s)												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	On-line documents of the adopted statistical software												
<b>References</b>	<p>SAS Certification Prep Guide: Advanced Programming for SAS 9, Third Edition.  Schreier, H.: PROC SQL by Example: Using SQL within SAS. (North Carolina: SAS Institute Inc., 2008)  Carpenter, A.: Carpenters Complete Guide to the SAS Macro Language. Second Edition. (North Carolina: SAS Institute Inc., 2004)</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2801 Life contingencies (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr E C K Cheung, Statistics and Actuarial Science												
<b>Course Aim</b>	The major objectives of this course are to integrate life contingencies into a full probabilistic framework. The time-until-death random variable is the basic building block by which models for life insurances, designed to reduce the financial impact of the random event of untimely death, are developed. This course introduces the concepts of life contingencies and the basic mathematical skills for modelling life insurance products.												
<b>Course Contents</b>	Key topics include: survival distributions; life table functions; select and ultimate tables; life insurance models; life annuity models; benefit premiums; benefit reserves.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- calculate the expected values, variances, probabilities, and percentiles for survival-time random variables;</li> <li>- define the continuous survival-time random variable that arises from the discrete survival-time random variable using some assumptions for fractional ages;</li> <li>- define present-value-of-benefit random variables defined on survival-time random variables;</li> <li>- define and calculate the expected values, variances and probabilities for present-value-of-benefit random variables, present-value-of-loss-at-issue random variables, and present-value-of-loss random variables;</li> <li>- calculate benefit premiums for life insurances and annuities;</li> <li>- calculate benefit reserves for life insurances and annuities;</li> <li>- cover part of Exam MLC of the Society of Actuaries.</li> </ul>												
<b>Pre-requisites</b>	(Pass in STAT1302 and STAT2315) or (Pass in STAT1802 and (Pass in STAT2802, or already enrolled in this course)) or (Pass in STAT1302 and STAT1802)												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and class tests												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. & Nesbitt, C.J.: Actuarial Mathematics (1997, 2nd edition), Itasca, Illinois: The Society of Actuaries												
<b>References</b>	Dickson, C.M.D., Hardy, M.R., and Waters, H.R.: Actuarial Mathematics for Life Contingent Risks (Cambridge: Cambridge University Press, 2009)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2802 Statistical models (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr G Tian, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is on the basis of 'STAT1801 Probability and Statistics: Foundation of Actuarial Science'. It will further study the concepts and methods of statistics. The course will lay emphasis on the estimation and hypothesis testing, the two major areas of statistical inference. Through the study of this course, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of data.												
<b>Course Contents</b>	Distribution and density of function of random variables; Order statistics, central limit theorem, Maximum likelihood estimator (MLE), moment estimator, Bayesian estimator, properties of estimators, limiting properties of MLE; Confidence interval estimations for normal mean, the difference of two normal means, normal variance, the ratio of two normal variances, and large-sample confidence intervals; Power function, Neyman-Pearson Lemma, likelihood ratio test, and goodness of fit test.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - understand the importance of sufficient statistic(s) in data reduction and statistical inferences such as point estimation, confidence interval estimation, and testing hypothesis; - derive maximum likelihood estimators of parameters to calculate maximum likelihood estimates; - locate pivotal quantity to construct confidence intervals of parameters; - find testing statistic to test hypotheses associated with one-sample and/or two-sample normal distributions with small sample sizes and non-normal distributions with large sample sizes												
<b>Pre-requisites</b>	Pass in STAT1801. (For BSc(Actuarial Science) students only)												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written paper (75% weighting), and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	Miller I. & Miller M.: John E. Freund's Mathematical Statistics with Applications (Pearson Education International, 2004, 7th edition) Hogg R. V., McKean J. W. & Craig A. T.: Introduction to Mathematical Statistics (Pearson Prentice Hall, 2005, 6th edition) Arnold S. F.: Mathematical Statistics (Prentice-Hall, 1990)												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	Other References: Larsen R. J. and Marx M. L.: An Introduction to Mathematical Statistics and Its Applications (Pearson International Edition, 4th edition)												

<b>STAT2803 Stochastic models (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr J F Yao, Statistics and Actuarial Science												
<b>Course Aim</b>	This is an introductory course in probability modelling. A range of important topics in stochastic processes will be discussed.												
<b>Course Contents</b>	Introduction to probability theory, Conditional probability and expectation, Markov chains, random walk models, classification of states in a Markov chain, calculation of limiting probabilities and mean time spent in transient states, Poisson process, distribution of interarrival time and waiting time, conditional distribution of the arrival time, Brownian Motion, hitting time and maximum variable, geometric Brownian motion, the Black-Scholes option pricing formula, Gaussian bridge, and stationary processes. Birth-and-death process, branching process and renewal process may also be covered (if time permits).												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - apply the conditioning method to calculate the mean and probability - understand the essentials of Markov chains, the Poisson process, and Brownian motion - understand how stochastic models can be applied to the study of real-life phenomena												
<b>Pre-requisites</b>	For BSc(Actuarial Science) students only; and Pass in STAT1801; and Not for students who have passed in MATH2603, or have already enrolled in this course; and Not for students who have passed in STAT2303, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting), and a coursework assessment (25% weighting) based on assignments and a class test												
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<b>Textbooks</b>	S. M. Ross: Introduction to Probability Models (9th edition)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2804 Linear models and forecasting (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof Y Lam, Statistics and Actuarial Science												
<b>Course Aim</b>	This course deals with applied statistical methods of linear models and investigates various forecasting procedures through using linear models and time series analysis.												
<b>Course Contents</b>	Regression and multiple linear regression; predicting; generalised linear model; time series models including autoregressive, moving average, autoregressive-moving average and integrated models; forecasting.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- fit a simple or multiple linear regression model to real data;</li> <li>- do ANOVA analysis;</li> <li>- fit a generalized linear model to the real data;</li> <li>- identify and fit a suitable AR, MA or ARMA model to real data;</li> <li>- perform residual analysis;</li> <li>- do forecasting with these fitted models.</li> </ul>												
<b>Pre-requisites</b>	<p>(Pass in STAT1302; or  Pass in STAT2802, or already enrolled in this course); and  For BSc(Actuarial Science) students only; and  Not for students who have passed in STAT2301, or have already enrolled in this course; and  Not for students who have passed in STAT3301, or have already enrolled in this course; and  Not for students who have passed in ECON0701, or have already enrolled in this course.</p>												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting), and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
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<b>References</b>	R. S. Pindyck & D. L. Rubinfeld: Econometric Models and Economic Forecasts (McGraw-Hill, 1998, 4th edition) Abraham & J. Ledolter: Statistical Methods for Forecasting (John Wiley & Sons, 2005, 2nd edition) G. E. P. Box, G. M. Jenkins & G. Reinsel: Time Series Analysis: Forecasting and Control (Prentice Hall, 1994, 3rd edition)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2805 Credibility theory and loss distributions (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr K C Cheung, Statistics and Actuarial Science												
<b>Course Aim</b>	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.												
<b>Course Contents</b>	Limited fluctuation approach; Buhlman's approach; Bayesian approach; empirical Bayes parameter estimations; construction and selection of parametric models; properties and estimation of failure time and loss distributions, determination of the acceptability of a fitted model; comparison of fitted models; simulation of both discrete and continuous random variables.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- apply limited fluctuation (classical) credibility including criteria for both full and partial credibility;</li> <li>- perform Bayesian analysis using both discrete and continuous models;</li> <li>- apply Buhlmann and Buhlmann-Straub models and understand the relationship of these to the Bayesian model;</li> <li>- apply conjugate priors in Bayesian analysis and in particular the Poisson-gamma model;</li> <li>- apply empirical Bayesian methods in the nonparametric and semiparametric cases;</li> <li>- construct and select empirical models;</li> <li>- determine the acceptability of a fitted model and/or compare models.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT1302 or STAT2802 or STAT3810												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td style="text-align: center;">Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>References</b>	Klugman S. A., Panjer H. H., & Willmot G. E.: Loss Models: From Data to Decisions (John Wiley & Sons, 2008, 3rd edition), Chapters 12-16, 20-21.												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2807 Corporate finance for actuarial science (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr J K Woo, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is designed for actuarial science students to receive VEE-Corporate Finance from Society of Actuaries. The objective of this course is to introduce students to the fundamental principles of corporate finance. The course will provide students with a systematic framework within which to evaluate investment and financing decisions for corporations.												
<b>Course Contents</b>	The first part of the course will give an introduction to corporate finance and provide an overview of some topics covered in STAT1802 and STAT2315. These include: financial markets and companies; present value and net present value, financial instruments and dividends derivatives market, no-arbitrage pricing theory, binomial model and Black-Scholes option pricing formula. The main part of the course will focus on some important topics of corporate finance including: capital structure and dividend policy, financial leverage and firm value, market efficiency, risk and return, investment decision using Markowitz mean variance analysis, CAPM, long term financing, measures and performance assessment of financial performance using various measures.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - understand the factors to be considered by a company when deciding on its capital structure and dividend policy, and also the impact of financial leverage and long/short term financing policies on capital structure; - calculate the value of bonds and stocks; - assess financial performance using various measures; - understand the mean-variance portfolio theory.												
<b>Pre-requisites</b>	Pass in BUS11002 and STAT1802; or Pass in STAT2310 and STAT2315.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	Brealey R. A., Myers S. C. and Allen, F.: Principles of Corporate Finance (2006, 8th edition)												
<b>References</b>	Ross, S. A., Westerfield, R. W. and Jaffe, J.: Corporate Finance (2005, 7th edition) Luenberger, D. G.: Investment Science (1998)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2812 Financial economics I (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof H L Yang, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is a basic course on the derivative market. The course covers discrete-time models, volatility estimation, and Black-Scholes formula and its variations. The course also includes some basic risk management ideas and methods. This course and STAT3812 will cover all the concepts, principles and techniques needed for SoA Exam MFE.												
<b>Course Contents</b>	Option on currencies; European and American options; conditional expectation and discrete-time martingale, discrete-time option-pricing theory; binomial model and its Greeks; true probabilities vs. risk-neutral probabilities; estimating volatility; the Black-Scholes formula; implied volatility; Greeks again; market-making and hedging; exotic options.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Calculate option price using binomial tree</li> <li>- Understand the risk neutral probability</li> <li>- Understand basic probability theory, include probability space, random variable, conditional probability, conditional expectation and discrete time martingale</li> <li>- Understand the Black-Scholes formula and its assumptions, the Greek letters, option elasticity, and implied volatility</li> <li>- Understand the hedging strategies and portfolio, market-maker risk, self-financing portfolio</li> <li>- Understand exotic options</li> </ul>												
<b>Pre-requisites</b>	<p>Pass in STAT1302 or STAT2802; and            Not for students who have passed in STAT3303, or have already enrolled in this course; and            Not for students who have passed in FINA0301, or have already enrolled in this course.</p>												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 10-14 Lecture notes on conditional expectations and martingale												
<b>References</b>	John Hull: Options, Futures and other Derivatives (2008, 7th edition)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT2813 Internship in actuarial science (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr L F K Ng, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is offered to actuarial science students who take on an 6-month full time or similar internships. The objective is for a student to complete this course as a project based on his/her internship.												
<b>Course Contents</b>	This course will include a written report which should emphasize important working/ educational experiences encountered by the student during his/her internship. In many situations, this would mean a report of the project(s) that the student has been involved in during his/her internship.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - Gain practical experiences during internship. - Describe basic actuarial practices learned during the internship. - Explain how actuarial theories learned in University can be applied in practice. - Provide context for specific technical skills developed in basic actuarial courses.												
<b>Pre-requisites</b>	Pass in STAT1802 or STAT2801; and For BSc(Actuarial Science) students only												
<b>Offer in 2012 - 2013</b>	1st sem 2nd sem	<b>Examination</b>	No Exam										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	No regular lectures												
<b>Assessment Method</b>	50% written report, 50% oral presentation and participation												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1"> <tr> <td>A</td> <td>Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.]</td> </tr> <tr> <td>B</td> <td>Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.</td> </tr> <tr> <td>C</td> <td>Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td>D</td> <td>Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td>Fail</td> <td>Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.]	B	Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.
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<b>Course Website</b>	webct.hku.hk												

<b>STAT2820 Introduction to financial derivatives (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr E C K Cheung, Statistics and Actuarial Science												
<b>Course Aim</b>	This course aims at providing an understanding of the fundamental concepts of financial derivatives. Emphases are on basic trading and hedging strategies, and the concept of no-arbitrage.												
<b>Course Contents</b>	Derivatives; short-selling; forward contracts; call options; put options; equity-linked CD; spreads and collars; hedging; financial forwards and futures; commodity swaps; interest rate swaps; put-call parity.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - define and recognize the definitions of terms commonly used in derivatives markets; - evaluate the payoff and profit of basic derivative contracts, including forwards, futures, options, and swaps; - explain how derivative securities can be used as tools to manage financial risk.												
<b>Pre-requisites</b>	Pass in STAT1802; and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT3303, or have already enrolled in this course; and Not for students who have already passed in STAT3308 before; and Not for students who have passed in FINA0301, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	McDonald, R. L.: Derivatives Markets (Addison Wesley, 2006, 2nd edition), Chapters 1-5, 8.												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3302 Multivariate data analysis (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	60										
<b>Course Co-ordinator</b>	Prof T W K Fung, Statistics and Actuarial Science												
<b>Course Aim</b>	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.												
<b>Course Contents</b>	Problems with multivariate data. Multivariate normality and transforms. Mean structure for one sample. Tests of covariance matrix. Correlations: Simple, partial, multiple and canonical. Multivariate regression. Principal components analysis. Factor analysis. Problems for means of several samples. Multivariate analysis of variance. Discriminant analysis. Classification. Multivariate linear model.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- analyze multivariate data with main SAS procedures, such as PROC IML, PROC REG, PROC CORR, PROC CANCORR, PROC PRINCOMP, PROC FACTOR, PROC DISCRIM, PROC CANDISC and etc.</li> <li>- compare the mean structure of multiple measurements for one or more than one population(s) by multivariate MANOVA and profile analysis</li> <li>- investigate the linear associations among one/two group(s) of variables by multiple, partial and canonical correlation and multivariate regression</li> <li>- explore the latent linear structure of a data set with multiple measurements by principal components analysis and factor analysis</li> <li>- classify observations of a population with one or more than one measurements by discriminant analysis</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2301 or STAT2804												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (50% weighting) and a course assessment (50% weighting) based on assignments, tutorials and a class test												
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<b>Textbooks</b>	Johnson, R. A. & Wichern, D. W.: Applied Multivariate Statistical Analysis (Prentice-Hall, 2007, 6th edition)												
<b>References</b>	Mardia K. V., Kent J. T., and Bibby J. M.: Multivariate Analysis (Academic Press, 1979) Seber G. A. F.: Multivariate Observations (John Wiley & Sons, 1984) Morrison D. F.: Multivariate Statistical Methods (McGraw-Hill, 1990, 3rd ed.) Hair J. F., Anderson R. E., Tatham R. L., & Black W. C.: Multivariate Data Analysis (Prentice-Hall, 2006, 6th edition) Srivastava M. S.: Methods of Multivariate Statistics (John Wiley and Sons, 2002) SAS Manuals on-line: Use the HELP button.												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3304 Computer-aided statistical modelling (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	60										
<b>Course Co-ordinator</b>	Dr G Tian, Statistics and Actuarial Science												
<b>Course Aim</b>	This is a computer-aided course of statistical modelling designed for students who have taken STAT2301 Linear Statistical Analysis and like to see theory illustrated by practical computation. Real data sets will be presented for modelling and analysis using statistical software SAS for gaining hands-on experience. The course aims to develop skills of model selection and hypotheses formulation 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.												
<b>Course Contents</b>	Descriptive statistics and presentation of data for nominal and continuous data; Simple statistical analyses for the one-sample and two-sample case using parametric and nonparametric methods; Regression analyses: Model Fitting; Regression analyses: Variable Selection and Model Diagnostic Checking; Analysis of Variance (ANOVA): 1-way, Two-Way and Higher-Way ANOVA; Covariance analysis; Logistic Regression.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - apply SAS SQL to access data to perform queries - use advanced SAS programming statements and techniques to solve complex problems - use the BY statement for parallel processing to aid automation - use the output dataset without printing to OUTPUT windows for piping idea in automation - use SAS MACRO to develop customized and automated applications.												
<b>Pre-requisites</b>	Pass in STAT2301 or STAT2804; and Not for students who have passed in STAT2311, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (50% weighting) and a coursework assessment (50% weighting) based on assignments, tutorials, and class test(s)												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	On-line documents of the adopted statistical software												
<b>References</b>	Bowerman, B.L. & O'Connell, R.T. (1990). Linear Statistical Models: An Applied Approach, 2nd edition, PWS-Kent Publishing Company. Cody, R.P. & Smith, J.K. (1997). Applied Statistics and the SAS Programming Language, 4th edition, North-Holland. Dilorio, F.C. & Hardy, K.A. (1996). Quick Start to Data Analysis with SAS, Duxbury Press. Elliott, R.J. (2000). Learning SAS in the Computer Lab, 2nd edition, Duxbury Press. Myers, R.H. (1990). Classical and Modern Regression with Applications, 2nd edition, PWS-Kent Publishing Company.												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3306 Selected topics in statistics (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof S M S Lee, Statistics and Actuarial Science												
<b>Course Aim</b>	This course introduces some statistical concepts and methods which potential graduate students will find useful in preparing for work on a research degree in statistics. Focus is on applications of state-of-the-art statistical techniques and their underlying theory.												
<b>Course Contents</b>	<p>The contents will be chosen from the following topics:</p> <ol style="list-style-type: none"> <li>1. Basic asymptotic methods: modes of convergence; stochastic orders; laws of large numbers; central limit theorems; delta method; Edgeworth expansions; saddlepoint approximations.</li> <li>2. Parametric and nonparametric likelihood methods: high-order approximations; profile likelihood and its variants; signed likelihood ratio statistics; empirical likelihood.</li> <li>3. Nonparametric statistical inference: sign and rank tests; Kolmogorov-Smirnov test; nonparametric regression; density estimation; kernel methods.</li> <li>4. Robust methods: measures of robustness; M-estimator; L-estimator; R-estimator; estimating functions.</li> <li>5. Computationally-intensive methods: cross-validation; bootstrap; permutation methods.</li> <li>6. Sequential analysis: sequential probability ratio test; sequential estimation.</li> <li>7. Model selection using information criteria.</li> <li>8. Other topics as determined by the instructor.</li> </ol>												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- comprehend the language and technicalities found in statistical research literature;</li> <li>- understand the use of standard mathematical tools for conducting statistical research;</li> <li>- apply a variety of research tools to solve standard statistical problems;</li> </ul> <p>acquire exposure to some developments in contemporary statistical research.</p>												
<b>Pre-requisites</b>	Pass in STAT2301 or STAT2804. This course is mutually exclusive to STAT6009.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	<p>DasGupta, A. (2008). Asymptotic Theory of Statistics and Probability. Springer.</p> <p>Efron, B. and Tibshirani, R.J. (1993). An Introduction to the Bootstrap. Chapman &amp; Hall: New York.</p> <p>Owen, A.B. (2001). Empirical Likelihood. Chapman &amp; Hall: Boca Raton.</p> <p>Shao, J. (1999). Mathematical Statistics. Springer: New York.</p> <p>Wasserman, L. (2006). All of Nonparametric Statistics. Springer.</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3316 Advanced probability (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof Y Lam, Statistics and Actuarial Science												
<b>Course Aim</b>	This course provides an introduction to measure theory and probability. The course will focus on some basic concepts in theoretical probability which are important for students to do research in actuarial science, probability and statistics.												
<b>Course Contents</b>	sigma-algebra, measurable space, measure and probability, measure space and probability space, measurable functions, random variables, integration theory, characteristic functions, convergence of random variables, Hilbert spaces, conditional expectation, martingales.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Understand the fundamental measure theory and probability theory.</li> <li>- Learn the general concept of integration, understand the monotone convergence theorem, Fatou's lemma and dominated convergence theorem.</li> <li>- Understand the concept of conditional expectation.</li> <li>- Have some elementary knowledge of martingale.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2303 or STAT2803. This course is mutually exclusive to STAT6010.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (50% weighting) and a coursework assessment (50% weighting) based on assignments, tutorials and a class test, etc.												
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<b>References</b>	<p>Jean Jacod and Philip Protter: Probability Essentials (Universitext, Springer-Verlag, New York, 2004, 2nd edition)  Chow Y. H. and Teicher H.: Probability Theory (Springer-Verlag, New York, 1997, 3rd edition)  Chung K. L.: A Course in Probability Theory (Academic Press, 2001, 3rd edition)</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3320 Risk management and Basel Accords in banking and finance (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Mr P K Y Pang, Statistics and Actuarial Science												
<b>Course Aim</b>	To provide comprehensive knowledge and in-depth understanding of risk management in the banking and finance industry to students. The focus is on management with basic measurement fundamentals only forming a part of the course. Accordingly, minimal background in quantitative methods will be required and involved. However, basic financial product (eg: bonds, swaps, options) knowledge will be required.												
<b>Course Contents</b>	<p>The course introduces and explains:</p> <ul style="list-style-type: none"> <li>- the importance of risk management,</li> <li>- risk nature and types,</li> <li>- design and establishment of a risk management framework,</li> <li>- the importance of people and corporate culture,</li> <li>- the complete risk management cycle,</li> <li>- measurement and management of credit, market and operational risks,</li> <li>- Basel accords and the capital treatments for credit, market and operational risks,</li> <li>- key developments (eg: Know-Your-Customers, Anti-Money laundering, Sarbanes-Oxley) and critical issues,</li> <li>- the importance of business continuity,</li> <li>- design and implementation of a business continuity plan.</li> </ul>												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to (in the context of banking and finance industry):</p> <ul style="list-style-type: none"> <li>- understand the importance, nature and classification of various risks, and the risk management principle and cycle,</li> <li>- design and establish a risk management framework,</li> <li>- demonstrate knowledge and understanding of the measurements of credit, market and operational risks,</li> <li>- explain and describe Basel accords and its capital treatments for credit, market and operational risks,</li> <li>- appreciate the importance of, design and implement a business continuity plan.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2812 or STAT2820 or STAT2808 or STAT3303 or STAT3308 or FINA0301; and Not for students who have already passed in STAT2320 before.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (60% weighting) and a coursework assessment (40% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	TBC												
<b>References</b>	<p>Crouhy, M., Galai, D. and Mark, R.: The Essentials of Risk Management (McGraw-Hill, 2006)          Jorion, P.: Financial Risk Manager Handbook + Test Bank: FRM part I/Part II (Wiley, 2010, 6th edition)          Hull, J. C.: Risk Management and Financial Institutions (Pearson Higher Education, 2010, 2nd edition)          Gallati, R.: Risk Management and Capital Adequacy (McGrawHill, 2003)</p>												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	This course is previously called STAT2320 as the prerequisite changed to STAT3303.												

<b>STAT3321 Credit risk analysis (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Mr K P Wat, Statistics and Actuarial Science												
<b>Course Aim</b>	For a commercial bank, credit risk has always been the most significant. It is the risk of default on debt, swap, or other counterparty instruments. Credit risk may also result from a change in the value of an asset resulting from a change in the counterparty's creditworthiness. This course will introduce students to quantitative models for measuring and managing credit risk. It also aims to provide students with an understanding of the credit risk methodology used in the financial industry and the regulatory framework in which the credit risk models operate.												
<b>Course Contents</b>	Probabilities of default, recovery rates and loss given default; Default and credit migration; credit scoring and internal rating models; Credit portfolio models such as CreditMetrics, CreditPortfolioView, KMV and actuarial approach; Credit derivatives.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: <ul style="list-style-type: none"> <li>- understand the Basel requirements for credit risk;</li> <li>- estimate credit scores using the logit model;</li> <li>- understand and estimate default probabilities using various approaches such as Moody's, the KMV and the mortality method;</li> <li>- understand the concept of credit value-at-risk and the CreditMetrics approach;</li> <li>- estimate default correlations;</li> <li>- assess rating systems.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2812 or STAT3303 or STAT3308 or STAT2808 or STAT2820 or FINA0301, or already enrolled in one of these courses.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (60% weighting) and a coursework assessment (40% weighting) based on assignments, tutorials and class test(s).												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	M. Crouhy, D. Galai & R. Mark: Risk Management (McGraw-Hill, 2001) A. Resti & A. Sironi: Risk Management and Shareholders' Value in Banking: From Risk Measurement Models to Capital Allocation Policies (Wiley, 2007) A. Saunders & L. Allen: Credit Risk Measurement In and Out of the Financial Crisis: New Approaches to Value at Risk and Other Paradigms (Wiley, 2010, 3rd Edition) G. Löffler & P. N. Posch: Credit Risk Modeling using Excel and VBA (Wiley, 2010, 2nd edition) J. R. Bohn & R. M. Stein: Active Credit Portfolio Management in Practice (Wiley, 2009) C. W. Smithson: Credit Portfolio Management (Wiley, 2003) D. N. Gujarati & D. C. Porter: Basic Econometrics (McGraw-Hill, 2009, 5th edition) J. C. Hull: Risk Management and Financial Institutions (Prentice Hall, 2010, 2nd edition)												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	References - Cont'd J. C. Hull: Options, Futures, and Other Derivatives (Prentice Hall, 2012, 8th edition)												

<b>STAT3322 Market risk analysis (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr Z Zhang, Statistics and Actuarial Science												
<b>Course Aim</b>	Financial risk management has experienced a revolution in the last decade thanks to the introduction of new methods for measuring risk, particularly Value-at-Risk (VaR). This course introduces modern risk management techniques covering the measurement of market risk using VaR models and financial time series models, and stress testing.												
<b>Course Contents</b>	Risk Measures; Value-Vat-Risk (VaR) models (parametric, Monte Carlo simulation and Historical simulation); Risk factor mapping; Advanced VaR models (GARCH-type models, extreme-value theory and normal-mixture); Principal Component Analysis and VaR; Backtesting and stress testing.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - Understand VaR and expected shortfall as risk measures, - Compute VaR and expected shortfall, - Model volatility using GARCH-type models, - Understand extreme-value theory, and - Understand backtesting and stress testing.												
<b>Pre-requisites</b>	Pass in ECON1001 or FINA2802 or STAT2309; or Pass in STAT2812 or STAT2806, or already enrolled in either course.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour examination (60% weighting) and a coursework assessment (40% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	Jorion, P.: Value-at-Risk: The New Benchmark for Managing Financial Risk (McGraw-Hill, 2007, 3rd edition) Alexander, C.: Market Models: A Guide to Financial Data Analysis (Wiley, 2001) Alexander, C.: Market Risk Analysis: Practical Financial Econometrics (Wiley, 2008) Alexander, C.: Market Risk Analysis: Value-at-Risk Models (Wiley, 2009) Tsay, R. S.: Analysis of Financial Time Series (Wiley, 2005, 2nd edition)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3801 Advanced life contingencies (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr L F K Ng, Statistics and Actuarial Science												
<b>Course Aim</b>	The objective of the course is to prepare students for the Non-traditional and Universal Life Insurance parts of the Models for Life Contingencies (MLC) course of the Society of Actuaries. Emphasis will be placed on applications of more advanced theories of life contingencies.												
<b>Course Contents</b>	This course is a continuation of the materials covered in STAT2801. We shall discuss the following topics: Loss-at-issue random variable, Benefit premium, Future loss random variable, Benefit reserves, Cash flow projection, Present value of cash flows, Expenses and asset shares.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- understand how concepts presented for traditional life insurances and annuities extend to non-interest sensitive insurances other than traditional insurances;</li> <li>- understand the models used to model cash flows for basic universal life insurances and calculate contract level values;</li> <li>- understand the models used to model cash flows of basic universal life insurance and calculate the present values of the cash flows;</li> <li>- understand the benefit reserve for and calculate benefit reserve for basic universal life insurances;</li> <li>- understand the relationship between expenses and gross premium and calculate contract level values based on the gross premium for life insurances and annuities.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2801, or already enrolled in this course; and For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting), and a coursework assessment (25% weighting) based on assignments and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	<p>Bowers, N. L. et al.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd ed)  Dickson, C.M.D., Hardy, M.R. and Waters, H.R.: Actuarial Mathematics for Life Contingent Risks (Cambridge University Press, 2009)</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3802 Advanced contingencies (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof H L Yang, Statistics and Actuarial Science												
<b>Course Aim</b>	This course serves as a continuation of STAT3801 and extends the coverage to include statistical models and actuarial techniques used in the field of life and non-life insurance. [Students are reminded that this course is a part of the requirement for the exemption from the Subject CT5 Contingencies of the Faculty and Institute of Actuaries, U.K.]												
<b>Course Contents</b>	Topic covers 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; valuation for pension plans; cost of guarantees and options; applications of actuarial techniques to a wide range of insurance problems. Equity linked insurance products and valuation of these products.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Value the cashflow contingent upon more than one risk</li> <li>- Calculate expected cashflows for whole life, endowment, term assurances, annuities, and unit-linked contracts</li> <li>- Understand simple annual premium contracts profit test and how the profit test may be used to price a product, or to determine reserves</li> <li>- Understand how to use multiple decrement tables to evaluate expected cashflows dependent upon more than one decrement, including: pension benefits, salary related benefits, health and care insurance</li> <li>- Understand the equity linked insurance products, and the method and idea of valuing the equity linked insurance products.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT3801; and For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting), and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	<p>Neill, A.: Life Contingencies (Heinemann, 1977)  Bowers, N. L. et al.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd ed.)  Scott, W. F.: Life Assurance Mathematics (Heriott-Watt University, 1999)  Berin, B. N.: The Fundamentals of Pension Mathematics (Society of Actuaries, 1989)  CT5 Contingencies Core Technical Core Reading (Institute of Actuaries, 2010)  Lecture note on equity linked insurance products.</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3806 Investment and asset management (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Head of Dept, Statistics and Actuarial Science												
<b>Course Aim</b>	The main objective of this course is to introduce students to some of the methods and procedures commonly used in the management of an investment portfolio. Emphasis will be placed on methods to tackle problems faced by insurance industry such as investment strategy formulation and interest rate risk management.												
<b>Course Contents</b>	This course provides an overview on the problems faced by actuaries when applying fundamental actuarial concepts to investment practice. This course will cover the following topics: Investment Management Process, Asset Allocation, Managing Fixed Income Portfolios and Performance Measurement.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Explain how an investment policy and an investment strategy can help manage risk.</li> <li>- Identify the obligations of a fiduciary in managing investment portfolios.</li> <li>- Describe how to select an investment strategy for an individual.</li> <li>- Describe the particular issues influencing investment strategies for institutional investors.</li> <li>- Explain principles of risk-based capital management.</li> <li>- Describe asset allocation strategies that can be used to construct an asset portfolio.</li> <li>- Identify and describe financial and non-financial risks faced by an entity.</li> <li>- Define risk metrics to quantify major types of risk exposure.</li> <li>- Apply ALM principles to the establishment of investment policy and strategy.</li> <li>- Select or build a benchmark for a given portfolio or portfolio management style.</li> <li>- Describe and assess performance measurement methodologies for investment portfolios.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2801; and For BSc(Actuarial Science) students only; and Not for students who have passed in FINA2802, or have already enrolled in this course.												
<b>Offer in 2012 - 2013</b>	Not offered	<b>Examination</b>	To be confirmed										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 2-hour written examination (50% weighting), and a coursework assessment (50% weighting) based on tutorials/example classes, group discussions, project and presentation												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	D. Babbel & F. J. Fabozzi: Investment Management for Insurers (Frank J. Fabozzi & Assoc., 1999) Z. Bodie, A. Kane, & A. Marcus: Investments (McGraw-Hill, 2005, 7th edition) Crouhy, Galai, & Mark: Risk Management (2001) F. J. Fabozzi: Handbook of Fixed Income Securities (McGraw-Hill, 2005, 7th edition) Litterman: Modern Investment Management: An Equilibrium Approach (2003)												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	Other references: J. L. Maginn, D.L. Tuttle, J.E. Pinto & D.W. McLeavey: Managing Investment Portfolios, A Dynamic Process (Wiley, 2007, 3rd edition) Tilman: Asset / Liability Management of Financial Institutions (2003)												

<b>STAT3807 Fundamentals of actuarial practice (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr L F K Ng, Statistics and Actuarial Science												
<b>Course Aim</b>	This course teaches students about the business environment and exposes them to practical real-world situations using the actuarial control cycle as a framework.												
<b>Course Contents</b>	This course provides an overview on selected materials relating to the following topics: Role of the Professional Actuary, External Forces, Risk in Actuarial Problems, Design and Pricing of Actuarial Solutions. Emphasis will be placed on applications to various financial security programmes including individual life insurance, group insurance, social security plans, retirement plans, investment funds and property & casualty insurance.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Provide introductory description of financial security systems, common actuarial techniques and practical experiences.</li> <li>- Describe actuarial practices, principles, approaches, methods, commonalities, problems and solutions.</li> <li>- Explain actuarial practices across the traditional areas of practice.</li> <li>- Explain actuarial practices as applied directly on behalf of financial security system providers or as a consultant to those providers.</li> <li>- Apply actuarial skills in nontraditional and emerging areas of practice.</li> <li>- Provide context for the specific mathematical and technical skills developed in the basic actuarial courses.</li> <li>- Prepare for the professional role as an Associate of the Society of Actuaries.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT3801; and For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	No Exam										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures.												
<b>Assessment Method</b>	100% coursework assessment (25% in-class quizzes or group discussions, 25% oral presentation and 50% written report)												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1"> <tr> <td>A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td>B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td>C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td>D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td>Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>References</b>	<p>Bellis, C., Shepherd, J., and Lyon, R.: Understanding Actuarial Management: The Actuarial Control Cycle (Institute of Actuaries of Australia, 2003)</p> <p>Bluhm, W. F.: Group Insurance (ACTEX Publications, 2007, 5th ed.)</p> <p>Brown, R. L. and Gottlieb, L. R.: Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance (ACTEX Publications, 2007, 3rd ed.)</p>												
<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	<p>Other references: Easton, A. E. and Harris, T. F.: Actuarial Aspects of Individual Life Insurance and Annuity Contracts (ACTEX Publications, inc., 2007, 2nd ed.)</p> <p>Lam, J.: Enterprise Risk Management: From Incentives to Controls (John Wiley &amp; Sons, 2003)</p> <p>Luenberger, D. G.: Investment Science (Oxford University Press, 1998)</p> <p>McGill, D. M., Brown, K. N., Haley, J. J., and Schieber, S. J.: Fundamentals of Private Pensions (Oxford University Press, 2005, 8th ed.)</p>												

<b>STAT3809 Current topics in actuarial science (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof W K Li, Statistics and Actuarial Science												
<b>Course Aim</b>	This course aims at providing practical elements for actuarial students including daily life actuarial practice and the basic capability to understand, research in and handle the laws as and when situations would arise, which will benefit students in their coming future career.												
<b>Course Contents</b>	<p>This course covers a full range of topics related to both areas including 1) Practical Actuarial Practice and 2) Actuaries' Legal Thinking.</p> <p>For Practical Actuarial Practice, it covers the major practical topics in both Life and Casualty areas. For Life Insurance, it covers the full picture of actuarial control cycle including Product Pricing, Valuation, Financial Reporting and Experience Analysis. For General Insurance, it covers the backbone areas including Product Pricing and Valuation.</p> <p>For Actuaries' Legal Thinking, after a quick coverage on the "why", this condensed part of the course is to help future actuaries to have basic understanding of how the law operates, the fundamentals in core legal subjects such as the Legal System, Contract and Tort, how to conduct preliminary legal researches, how to work with lawyers, how to interpret written judgment and current issues in the law. This part will not be completed without a devoted section on studying some basic legal doctrines in the law of insurance.</p>												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- have a basic understanding regarding Actuarial Control Cycle from A to Z for Life Insurance and General Insurance;</li> <li>- possess some experience regarding fundamental actuarial practice through practical project;</li> <li>- possess basic understanding of the legal system in Hong Kong;</li> <li>- possess fundamental knowledge in certain core legal aspects such as the law of contract and the law of tort;</li> <li>- possess fundamental knowledge of the law of insurance;</li> <li>- conduct elementary legal researches when facing with legal problems;</li> <li>- understand the basic elements of a routine judgment, the matrix of the facts and the law involved.</li> </ul>												
<b>Pre-requisites</b>	(Pass in STAT2801, or already enrolled in this course; or Pass in STAT3801, or already enrolled in this course); and For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	No Exam										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures.												
<b>Assessment Method</b>	100% coursework assessment based on assignments, practical project and class test(s)												
<b>Course Grade</b>	A+ to F												
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<b>Course Website</b>	webct.hku.hk												

<b>STAT3810 Risk theory (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr K C Cheung, Statistics and Actuarial Science												
<b>Course Aim</b>	Risk theory is one of the main topics in actuarial science. Risk theory is the applications of statistical models and stochastic processes to insurance problems such as the premium calculation, ruin probability, etc.												
<b>Course Contents</b>	Severity models; frequency models; collective risk models; coverage modifications; ruin theory; risk measures; simulation.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Understand the individual risk model and the collective risk model, evaluate the distribution and expectation of the total claim amounts.</li> <li>- Estimate the premium of a policyholder and the total claim amounts using the information of the claim amounts made in previous years.</li> <li>- Calculate some commonly used risk measures and explain their use and limitation.</li> <li>- Apply simulation methods within the context of actuarial models.</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT2803, or already enrolled in this course; or Pass in STAT2303 or MATH2603												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test, etc.												
<b>Course Grade</b>	A+ to F												
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<b>References</b>	<p>Klugman S. A., Panjer H. H., &amp; Willmot G. E.: Loss Models: From Data to Decisions (John Wiley &amp; Sons, Inc., 2008, 3rd edition)</p> <p>Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. and Nesbitt, C.J.: Actuarial Mathematics (The Society of Actuaries, 1977, 2nd edition)</p> <p>Gollier, C.: The Economics of Risk and Time (The MIT Press, 2001)</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3811 Survival analysis (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr E K F Lam, Statistics and Actuarial Science												
<b>Course Aim</b>	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.												
<b>Course Contents</b>	The nature and properties of parametric and nonparametric survival models will be studied. Topics to be covered include: the introduction of some important basic quantities like the hazard function and survival function; some commonly used parametric survival models; concepts of censoring and/or truncation; parametric estimation of the survival distribution by maximum likelihood estimation method; nonparametric estimation of the survival functions from possibly censored samples by means of the Kaplan-Meier estimator, the Nelson-Aalen estimator; and the kernel density estimator or the Ramlau-Hansen estimator and comparisons of k independent survival functions by means of the generalized log-rank test; parametric regression models; Cox's semiparametric proportional hazards regression model; and multivariate survival analysis.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - acquire a clear understanding of the nature of failure time data or survival data, a generalization of the concept of death and life, - perform estimation for some commonly used survival models under different types of censoring mechanisms, - analyze survival data using the Cox's semiparametric proportional hazards model, - extend the Cox's model to a multivariate setup to accommodate multivariate survival data.												
<b>Pre-requisites</b>	Pass in STAT2802, or already enrolled in this course; or Pass in STAT2301 or STAT2801												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test												
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<b>References</b>	Cox, D. R. and Oakes, D.: Analysis of Survival Data (Chapman and Hall, 1984) Hosmer, D. W. and Lemeshow, S.: Applied Survival Analysis: Regression Modeling of Time to Event Data (Wiley, 1999) Klein, J. P. and Moeschberger, M. L.: Survival Analysis: Techniques for Censored and Truncated Data (Springer Verlag, New York, 2005, 2nd ed.)												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3819 Project in statistics and actuarial science (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Prof S M S Lee, Statistics and Actuarial Science												
<b>Course Aim</b>	Each year a few projects suitable for Actuarial Science students will be offered to provide students with practical experience in approaching a real problem, in report writing and in oral presentation.												
<b>Course Contents</b>	These projects, under the supervision of individual staff members, involve the applications of statistics and/or probability in a wide range of problems of practical and/or academic interests.												
<b>Learning Outcomes</b>	On successful completion of the course, students should be able to: - formulate meaningful research problems; - learn and apply advanced techniques in probability and/or statistics to solve real life problems; - summarize and present research findings in a professional manner.												
<b>Pre-requisites</b>	For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	Year long	<b>Examination</b>	No Exam										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	No regular lectures. The student is expected to meet and discuss with a supervisor regularly in the course of the project.												
<b>Assessment Method</b>	Written report (50%), oral presentation and participation (50%)												
<b>Course Grade</b>	A+ to F												
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<b>Course Website</b>	webct.hku.hk												
<b>Remarks</b>	Approval is subject to past academic performance.												

<b>STAT3820 Pension Funds and Pension Mathematics (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr G Ma, Statistics and Actuarial Science												
<b>Course Aim</b>	This course covers the basics of pension plan design and pension fund management, as well as the fundamentals of pension plan valuations using different actuarial cost methods. The students will be introduced to the application of actuarial valuation techniques to the funding and accounting of pension plans.												
<b>Course Contents</b>	The following topics will be covered: Fundamentals of private pension plans; pricing and valuation of pension obligations; actuarial cost methods and their effects on cost patterns; selection of actuarial assumptions; principles of asset and liability management.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- calculate the pension benefits in accordance with the provisions of a pension plan;</li> <li>- calculate the normal cost and actuarial liabilities using different actuarial cost methods;</li> <li>- perform gain and loss analyses for pension valuations;</li> <li>- select appropriate assumptions and methods for funding or accounting purposes;</li> <li>- interpret the valuation results presented in actuarial valuation reports;</li> <li>- develop models for asset and liability projections</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT3801; and For BSc(Actuarial Science) students only.												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	This course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials and a class test.												
<b>Course Grade</b>	A+ to F												
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<b>Textbooks</b>	Arthur W. Anderson: Pension Mathematics for Actuaries (2006, 3rd edition). McGill, D.M., Brown, K.N., Haley, J.J., Schieber, S.J.: Fundamentals of Private Pensions (2010, 9th Edition)												
<b>References</b>	William H. Aitken: Problem-Solving Approach to Pension Funding and Valuation, (2nd edition). Morneau Sobeco: Handbook of Canadian Pension & Benefit Plans (2008, 14th Edition) Actuarial Standard of Practice No. 4, Measuring Pension Obligations Actuarial Standard of Practice No. 27, Selection of Economic Assumptions for Measuring Pension Obligations Actuarial Standard of Practice No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3821 Financial economics II (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr E C K Cheung, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is an advanced course on the option pricing theory. The course covers Black-Scholes equation and stochastic calculus, and interest models. This course and STAT2812/STAT2806 will cover all the concepts, principles and techniques needed for SoA Exam MFE.												
<b>Course Contents</b>	Brownian motion; introduction to stochastic calculus; arithmetic and geometric Brownian motion; Ito formula; Sharpe ratio and risk premium; Black-Scholes equation; risk-neutral stock-price process and option pricing; option's elasticity and volatility; Vasicek, Cox-Ingersoll-Ross, and Black-Derman-Toy models; delta-hedging for bonds and the Sharpe-ratio equality constraint; Black's model; options on zero-coupon bonds; interest-rate caps and caplets.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- Understand Brownian motion and its properties</li> <li>- Understand the Ito calculus and Ito formula</li> <li>- Understand the Black-Scholes model and option pricing theory</li> <li>- Understand the delta hedging and some basic risk management methods</li> <li>- Understand some basic interest rate models</li> </ul>												
<b>Pre-requisites</b>	Pass in MATH2603 or STAT2803 or STAT2806 or STAT2812 or STAT3316												
<b>Offer in 2012 - 2013</b>	2nd sem	<b>Examination</b>	May										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments and a class test												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1"> <tr> <td>A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td>B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td>C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td>D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td>Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>Textbooks</b>	Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 20, 21 and 24.												
<b>References</b>	<p>John Hull: Options, Futures and Other Derivatives (2008, 7th edition)</p> <p>Alison Etheridge: A Course in Financial Calculus (2002)</p> <p>Steven Shreve: Stochastic Calculus for Finance II Continuous-Time Models (2008)</p>												
<b>Course Website</b>	webct.hku.hk												

<b>STAT3822 Risk Theory II (6 credits)</b>		<b>Academic Year</b>	<b>2012</b>										
<b>Offering Department</b>	Statistics and Actuarial Science	<b>Quota</b>	---										
<b>Course Co-ordinator</b>	Dr J K Woo, Statistics and Actuarial Science												
<b>Course Aim</b>	This course is an advanced course in risk theory which extends various topics discussed in STAT3810. It discusses utility theory, ruin theory, aggregate claims process, and related topics.												
<b>Course Contents</b>	Utility theory; discrete ruin model; compound Poisson risk model; ruin probability; reinsurance; adjustment coefficient; Lundbergs inequality; Tijms approximation; non-homogeneous birth process; contagion model; mixed Poisson process; inflation model; IBNR (Incurred But Not Reported) claims; mixed Erlang distributions; stop-loss moments; equilibrium distributions.												
<b>Learning Outcomes</b>	<p>On successful completion of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>- understand utility theory including some commonly used utility functions, Jensens inequality, risk aversion and utility maximization</li> <li>- define discrete and continuous ruin models</li> <li>- calculate the adjustment coefficient, Lundbergs inequality and Tijms approximation in ruin theory</li> <li>- understand the effect of reinsurance and change of parameters on ruin probability</li> <li>- understand non-homogeneous birth process and its applications as contagion models for claim frequencies</li> <li>- understand mixed Poisson process and its applications including the inflation model and the IBNR model</li> <li>- derive the relationship between stop-loss moments and equilibrium distributions</li> </ul>												
<b>Pre-requisites</b>	Pass in STAT3810												
<b>Offer in 2012 - 2013</b>	1st sem	<b>Examination</b>	Dec										
<b>Offer in 2013 - 2014</b>	Y												
<b>Teaching Hours</b>	The course consists of 36 lectures and 12 tutorials/example classes.												
<b>Assessment Method</b>	One 3-hour written examination (75% weighting) and a coursework assessment (25% weighting) based on assignments, tutorials, and a class test, etc.												
<b>Course Grade</b>	A+ to F												
<b>Grade Descriptors</b>	<table border="1"> <tr> <td>A</td> <td>Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.</td> </tr> <tr> <td>B</td> <td>Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.</td> </tr> <tr> <td>C</td> <td>Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</td> </tr> <tr> <td>D</td> <td>Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.</td> </tr> <tr> <td>Fail</td> <td>Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td> </tr> </table>			A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
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<b>References</b>	<ul style="list-style-type: none"> <li>- Klugman S.A., Panjer H.H., &amp; Willmot G.E.: Loss Models: From Data to Decisions (John Wiley &amp; Sons, 2007, 3rd edition).</li> <li>- Kaas R., Goovaerts M., Dhaene J., &amp; Denuit M.: Modern Actuarial Risk Theory (Springer, 2004, 1st edition).</li> <li>- Bowers N.L., Gerber H.U., Hickman J.C. &amp; Jones D.A.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd edition).</li> <li>- Willmot G.E. &amp; Lin X.S.: Lundberg Approximations for Compound Distributions with Insurance Applications (Springer, 2000, 1st edition).</li> </ul>												
<b>Course Website</b>	webct.hku.hk												

SECTION V Degree Regulations**REGULATIONS FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE  
BSc(ActuarSc)**

*These regulations apply to students admitted under the 3-year curriculum to the first year of the BSc in Actuarial Science degree curriculum in the academic year 2012-2013.  
(See also General Regulations and Regulations for First Degree Curricula)*

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**Definitions**

**AS1<sup>1</sup>** For the purpose of these regulations and the syllabuses for the degree of BSc in Actuarial Science, unless the context otherwise requires:

“Course” means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

“Syllabus” means courses taught by departments, centres, and schools, offered under a degree curriculum.

“Credits” or “credit-units” means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

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**Admission to the BSc in Actuarial Science degree**

**AS2** To be eligible for admission to the BSc in Actuarial Science degree, candidates shall:

- (a) comply with the General Regulations;
  - (b) comply with the Regulations for First Degree Curricula; and
  - (c) satisfy all the requirements of the curriculum in accordance with these regulations and the syllabuses.
- 

**Period of study**

**AS3** The curriculum for the BSc(ActuarSc) degree shall normally require six semesters of full-time study, extending over not fewer than three academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their studies beyond the maximum period of registration of five academic years.

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**Selection of courses**

**AS4** Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each semester. Any change to the selection of

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<sup>1</sup> This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.

courses shall be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate. Requests for changes after the designated add/drop period of the semester shall not be considered.

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### **Curriculum requirements and progression in curriculum**

#### **AS5**

- (a) Candidates shall satisfy the requirements prescribed in UG5 of the Regulations of First Degree Curricula.
  - (b) Candidates shall take not fewer than 180 credits, in the manner specified in these regulations and the syllabuses, including the 144 credits of required courses as prescribed in the BSc(ActuarSc) degree curriculum.
  - (c) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements may be fewer than 24 credits.
  - (d) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load of 216 credits for the normative period of study specified in the curriculum regulations, save as provided for under AS5(e).
  - (e) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load of 360 credits for the maximum period of registration specified in the curriculum regulations.
  - (f) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits will be recorded on the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.
  - (g) Candidates shall be recommended for discontinuation of their studies if they have:
    - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
    - (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
    - (iii) exceeded the maximum period of registration specified in AS3,unless otherwise permitted by the Board of the Faculty.
-

**Advanced standing**

**AS6** Advanced standing may be granted to candidates in recognition of studies completed successfully in an approved institution of higher education elsewhere in accordance with UG2 of the Regulations for First Degree Curricula. Credits granted for advanced standing will be recorded on the transcript of the candidate but shall not be included in the calculation of the GPA.

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**Assessment****AS7**

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only satisfactorily completed courses will earn credits.
  - (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
  - (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
  - (d) Candidates are required to make up for failed courses in the following manner: repeating the failed course by undergoing instruction and satisfying the assessment, or for elective courses, taking another course in lieu and satisfying the assessment requirements.
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**Award of BSc in Actuarial Science Degree**

**AS8** To be eligible for the award of the BSc in Actuarial Science degree, candidates shall have:

- (a) satisfied the requirements in UG5 of the Regulations for First Degree Curricula;
  - (b) passed not fewer than 180 credits, comprising all required courses as prescribed in the BSc(ActuarSc) degree curriculum.
- 

**Honours classification****AS9**

- (a) Honours classifications shall be awarded in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the Degree of BSc(ActuarSc) in accordance with the following Cumulative GPA scores, with all courses taken (including failed courses, but not including courses approved by the Senate graded as 'Pass', 'Fail' or 'Distinction') carrying equal weighting:

<i>Class of honours</i>	<i>CGPA range</i>
First Class Honours	3.60 – 4.30
Second Class Honours	(2.40 – 3.59)
Division One	3.00 – 3.59
Division Two	2.40 – 2.99
Third Class Honours	1.70 – 2.39
Pass	1.00 – 1.69

- (b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the Degree of BSc(ActuarSc) may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.05 Grade Point.
- (c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.
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## **REGULATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN ACTUARIAL SCIENCE BSc(ActuarSc)**

*These regulations apply to students admitted to the BSc in Actuarial Science degree curriculum in the academic years 2010-2011 and 2011-2012.*

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

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### **Definitions**

**AS1<sup>1</sup>** For the purpose of these regulations and the syllabuses for the degree of BSc in Actuarial Science, unless the context otherwise requires:

“Course” means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

“Syllabus” means courses taught by departments, centres, and schools, offered under a degree curriculum.

“Credits” or “credit-units” means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

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### **Admission to the BSc in Actuarial Science degree**

**AS2** To be eligible for admission to the BSc in Actuarial Science degree, candidates shall:

- (a) comply with the General Regulations;
  - (b) comply with the Regulations for First Degree Curricula; and
  - (c) satisfy all the requirements of the curriculum in accordance with these regulations and the syllabuses.
- 

### **Period of study**

**AS3** The curriculum for the BSc(ActuarSc) degree shall normally require six semesters of full-time study, extending over not fewer than three academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their studies beyond the maximum period of registration of five academic years.

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### **Selection of courses**

**AS4** Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each semester. Any change to the selection of courses shall be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate. Requests for changes after the designated add/drop period of the semester shall not be considered.

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<sup>1</sup> This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.

## Curriculum requirements and progression in curriculum

### AS5

- (a) Candidates shall satisfy the requirements prescribed in UG5 of the Regulations of First Degree Curricula.
- (b) Candidates shall take not fewer than 180 credits, in the manner specified in these regulations and the syllabuses, including the 144 credits of required courses as prescribed in the BSc(ActuarSc) degree curriculum.
- (c) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements may be fewer than 24 credits.
- (d) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load of 216 credits for the normative period of study specified in the curriculum regulations, save as provided for under AS5(e).
- (e) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load of 360 credits for the maximum period of registration specified in the curriculum regulations.
- (f) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits will be recorded on the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.
- (g) Candidates shall be required to discontinue their studies if they have:
  - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
  - (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters, or
  - (iii) exceeded the maximum period of registration specified in AS3,
 unless otherwise permitted by the Board of the Faculty.

### Advanced standing

**AS6** Advanced standing may be granted to candidates in recognition of studies completed successfully in an approved institution of higher education elsewhere in accordance with UG2 of the Regulations for First Degree Curricula. Credits granted for advanced standing will be recorded on the transcript of the candidate but shall not be included in the calculation of the GPA.

**Assessment****AS7**

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only satisfactorily completed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (d) Candidates are required to make up for failed courses in the following manner: repeating the failed course by undergoing instruction and satisfying the assessment, or for elective courses, taking another course in lieu and satisfying the assessment requirements.

**Degree classification**

**AS8** To be eligible for the award of the BSc in Actuarial Science degree, candidates shall have:

- (a) satisfied the requirements in UG5 of the Regulations for First Degree Curricula;
- (b) passed not fewer than 180 credits, comprising all required courses as prescribed in the BSc(ActuarSc) degree curriculum.

**AS9** The degree of Bachelor of Science in Actuarial 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. A list of candidates who have successfully completed all the degree requirements shall be posted on Faculty notice boards.

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

*These regulations apply to students admitted to the BSc in Actuarial Science degree curriculum in the academic year 2009-2010 or before.*

*(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<sup>(1)</sup>** 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<sup>(2)</sup>;
- (b) enrol in not less than 180 credits of courses, unless otherwise required or permitted under the Regulations;

<sup>(1)</sup> This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.

<sup>(2)</sup> The specific requirements applicable to candidates of this degree curriculum are spelt out in the syllabuses.

- (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.

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### **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.

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

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### **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.

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### **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.

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**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.
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**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.

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**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.
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**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.

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**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 specified. 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 with the prefix STAT 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 with other prefixes, please check with the respective departments about the duration of examination and assessment ratio.

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*Regulations for First Degree Curricula (for students admitted to the first year in 2012-2013 under the 3-year '2010 curriculum')*

## REGULATIONS FOR FIRST DEGREE CURRICULA<sup>1</sup>

*(See also General Regulations)*

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### **UG 1 Definitions:**

For the purpose of regulations and syllabuses for all first degree curricula unless otherwise defined —

An 'academic year' comprises two semesters, the first semester to commence in September and end in December, and the second semester to commence in January and end in May/June, on dates as prescribed by the Senate. It includes, normally at the end of each semester, a period during which candidates are assessed. For some curricula, a 'summer semester' may be organized in addition to the normal two semesters. Clinical curricula have extended semesters.

A 'summer semester' normally comprises seven to eight weeks of intensive timetabled teaching and assessment to commence four weeks after the end of the second semester assessment period, and to conclude about one week before the start of the next academic year.

The 'maximum period of registration' is equivalent to a period which is 150% of the curriculum's normative period of study as specified in the degree regulations, provided that where this results in a residual fraction of an academic year, the fractional period shall be extended to one full academic year.

'Degree curriculum' means the entire study requirements for the award of an undergraduate degree.

'Major programme' means the study requirements for a single major area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 60 credits nor more than 96 credits, as prescribed in the syllabuses for a degree curriculum.

'Minor programme' means the study requirements for a single minor area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 36 credits nor more than 48 credits, as prescribed in the syllabuses for a degree curriculum.

'Course' means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

'Disciplinary elective course' or 'Disciplinary Elective' means any course offered in the same major programme or discipline which can be taken by candidates to fulfill the curriculum requirements as specified in the syllabuses of the degree curriculum.

'Elective course' or 'Elective' means any course offered within the same or another curriculum, other than compulsory courses in the candidate's degree curriculum, that can be taken by the candidate in order to complete the credit requirements of the degree.

'Syllabus' means courses taught by departments, centres, and schools, offered under a degree curriculum.

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<sup>1</sup> These regulations are applicable to candidates admitted under the 3-year '2010 curriculum' to the first year of first degree curricula in 2012-13. Reference in these regulations to the powers of the Boards of Faculties shall be applicable to Senate Boards of Studies which administer first degree curricula.

(Please refer to the Calendar for 2011-12 for the Regulations for First Degree Curricula applicable to cohorts admitted before 2012-13.)

‘Prerequisite’ means a course or a group of courses which candidates must have completed successfully or a requirement which candidates must have fulfilled before being permitted to take the course in question.

‘Corequisite’ means a course which candidates must take in conjunction with the course in question.

‘Credits’ or ‘credit-units’ means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

‘Grade Points’ are standardized measurements of candidates’ academic achievement in courses taken to satisfy the requirements of the degree curriculum and are expressed as a scale prescribed in these regulations.

‘Grade Point Average’ is a numerical measure of a candidate’s academic achievement over a specified period of time. Each course attempted (including each failed course) is assigned a numerical value, with all courses carrying equal weighting. This numerical value is the product of grade points earned for the course and the credit value of that course. The ‘Grade Point Average’ is the sum of these numerical values divided by the total number of credits attempted:

$$GPA = \frac{\sum_i \text{Course Grade Point} \times \text{Course Credit Value}}{\sum_i \text{Course Credit Value}}$$

(where ‘i’ is the number of all passed and failed courses taken by the student over a specified period)

‘Semester Grade Point Average’ or ‘Semester GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) during a given semester.

‘Year Grade Point Average’ or ‘Year GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) during a given academic year.

‘Cumulative Grade Point Average’ or ‘Cumulative GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) at the time of calculation.

‘Assessment’ refers to judgment about the quality and extent to which a student has achieved the stated learning objectives or learning outcomes. It includes all types of assessment activities which allow for such a judgment to be made. For the purpose of interpreting the relevant provisions of the Ordinance and the Statutes and where appropriate, reference to ‘examination’ or ‘examinations’ in the Ordinance and the Statutes shall include and cover all forms of ‘assessment’ and its related processes.

A ‘transcript’ is a transcript of the record of study of a candidate, issued by the Registry of the University.

## **UG 2 Advanced standing:**

Advanced standing may be granted to candidates in recognition of studies completed successfully elsewhere before admission to the University. Candidates who are awarded Advanced Standing will not be granted any further credit transfer for those studies for which Advanced Standing has been granted. The amount of credits to be granted for advanced standing shall be determined by the Board of the Faculty, in accordance with the following principles:

- (a) at least half the number of credits of the degree curriculum normally required for award of the degree shall be accumulated through study at this University or from transfer of credits for courses completed at other institutions in accordance with Regulation UG 4(d); and
- (b) in accordance with Statute III.5 and notwithstanding the granting of advanced and/or transfer credits, a minimum of two semesters of study at this University shall be required before a candidate is considered for the award of a first degree, other than a degree in medicine or surgery, and a minimum of four semesters of study at this University shall be required before a candidate is considered for a first degree in medicine or surgery.

Credits granted for advanced standing shall not normally be included in the calculation of the GPA unless permitted by the Board of the Faculty but will be recorded on the transcript of the candidate.

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### **UG 3 Period of study:**

The period of study of the curriculum shall be specified in the regulations governing the degree. To be eligible for award of the degree, a candidate shall fulfill all curriculum requirements within the maximum period of registration, unless otherwise permitted or required by the Board of the Faculty.

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### **UG 4 Progression in curriculum:**

- (a) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements is fewer than 24 credits.
- (b) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load for the normative period of study specified in the curriculum regulations, save as provided for under UG4(c).
- (c) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load for the maximum period of registration specified in the curriculum regulations.
- (d) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits may be recorded in the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.
- (e) Unless otherwise permitted by the Board of the Faculty, candidates shall be recommended for discontinuation of their studies if they have:
  - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or

- (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
- (iii) exceeded the maximum period of registration specified in the regulations of the degree.

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### **UG 5 Requirements for graduation:**

To be eligible for admission to the degree, candidates shall fulfill the following requirements in addition to the requirements prescribed in the regulations and syllabuses governing the degree curriculum within the maximum period of registration:

- (a) successful completion of 6 credits in English language enhancement;
- (b) successful completion of 3 credits in Chinese language enhancement<sup>2</sup>; and
- (c) successful completion of 12 credits of courses in the Common Core Curriculum, selecting no more than one course from each Area of Inquiry.

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### **UG 6 Exemption:**

Candidates may be exempted, with or without special conditions attached, from any of the requirements in UG 5 by the Senate in exceptional circumstances. Candidates who are so exempted must replace the number of exempted credits with courses of the same credit value.

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### **UG 7 Assessment:**

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only satisfactorily completed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (d) Candidates are required to make up for failed courses in the following manner as prescribed in the curriculum regulations:
  - (i) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or
  - (ii) re-submitting failed coursework, without having to repeat the same course of instruction; or
  - (iii) repeating the failed course by undergoing instruction and satisfying the assessments; or
  - (iv) for elective courses, taking another course *in lieu* and satisfying the assessment requirements.

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<sup>2</sup> Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

**UG 8 Grading system:**

- (a) The grades, their standards and the grade points for assessment shall be as follows<sup>3</sup>:

<i>Grade</i>	<i>Standard</i>	<i>Grade Point</i>
A+	Excellent	4.3
A		4.0
A-		3.7
B+	Good	3.3
B		3.0
B-		2.7
C+	Satisfactory	2.3
C		2.0
C-		1.7
D+	Pass	1.3
D		1.0
F	Fail	0

- (b) Special permission may be given by Senate for courses in individual curricula to be graded as 'Pass', 'Fail' or 'Distinction'. Such courses will not be included in the calculation of the GPA.

**UG 9 Honours classifications:**

- (a) Honours classifications shall be awarded in five divisions<sup>4</sup>: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the degree in accordance with the following Cumulative GPA scores, with all courses taken (including failed courses) carrying equal weighting:

<i>Class of honours</i>	<i>CGPA range</i>
First Class Honours	3.60 – 4.30
Second Class Honours	(2.40 – 3.59)
Division One	3.00 – 3.59
Division Two	2.40 – 2.99
Third Class Honours	1.70 – 2.39
Pass	1.00 – 1.69

- (b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the degree may, at its absolute discretion and with justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Cumulative GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.05 Grade Point.
- (c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.

<sup>3</sup> UG 8 is not applicable to the BDS and MBBS curricula.

<sup>4</sup> UG 9 is not applicable to the BChinMed, BDS and MBBS.

*Regulations for First Degree Curricula (for students admitted to the first year in 2010-2011, 2011-2012 and admitted directly to the second year in 2011-2012 and 2012-2013)*

## REGULATIONS FOR FIRST DEGREE CURRICULA<sup>1</sup>

*(See also General Regulations)*

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### **UG 1 Definitions:**

For the purpose of regulations and syllabuses for all first degree curricula unless otherwise defined —

An ‘academic year’ comprises two semesters, the first semester to commence in September and end in December, and the second semester to commence in January and end in May/June, on dates as prescribed by the Senate. It includes, normally at the end of each semester, a period during which candidates are assessed. For some curricula, a ‘summer semester’ may be organized in addition to the normal two semesters. Clinical curricula have extended semesters.

A ‘summer semester’ normally comprises seven to eight weeks of intensive timetabled teaching and assessment to commence four weeks after the end of the second semester assessment period, and to conclude about one week before the start of the next academic year.

The ‘maximum period of registration’ is equivalent to a period which is 150% of the curriculum’s normative period of study as specified in the degree regulations, provided that where this results in a residual fraction of an academic year, the fractional period shall be extended to one full academic year.

‘Degree curriculum’ means the entire study requirements for the award of an undergraduate degree.

‘Major programme’ means the study requirements for a single major area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 60 credits nor more than 96 credits, as prescribed in the syllabuses for a degree curriculum.

‘Minor programme’ means the study requirements for a single minor area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 36 credits nor more than 48 credits, as prescribed in the syllabuses for a degree curriculum.

‘Course’ means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

‘Disciplinary elective course’ or ‘Disciplinary Elective’ means any course offered in the same major programme or discipline which can be taken by candidates to fulfill the curriculum requirements as specified in the syllabuses of the degree curriculum.

‘Elective course’ or ‘Elective’ means any course offered within the same or another curriculum, other than compulsory courses in the candidate’s degree curriculum, that can be taken by the candidate in order to complete the credit requirements of the degree.

‘Syllabus’ means courses taught by departments, centres, and schools, offered under a degree curriculum.

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<sup>1</sup> These regulations are applicable to candidates admitted to the first year of first degree curricula in 2010-11 and thereafter. Reference in these regulations to the powers of the Boards of Faculties shall be applicable to Senate Boards of Studies which administer first degree curricula.

(Please refer to the Calendar for 2009-10 for the Regulations for First Degree Curricula applicable to cohorts admitted before 2010-11.)

‘Prerequisite’ means a course or a group of courses which candidates must have completed successfully or a requirement which candidates must have fulfilled before being permitted to take the course in question.

‘Corequisite’ means a course which candidates must take in conjunction with the course in question.

‘Credits’ or ‘credit-units’ means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

‘Grade Points’ are standardized measurements of candidates’ academic achievement in courses taken to satisfy the requirements of the degree curriculum and are expressed as a scale prescribed in these regulations.

‘Grade Point Average’ is a numerical measure of a candidate’s academic achievement over a specified period of time, and is calculated by the total of the product of grade points earned for each course attempted (including failed courses) and its credit value being divided by the total number of credits attempted:

$$GPA = \frac{\sum_i \text{Course Grade Point} \times \text{Course Credit Value}}{\sum_i \text{Course Credit Value}}$$

(where ‘i’ is the number of all passed and failed courses taken by the student over a specified period)

‘Semester Grade Point Average’ or ‘Semester GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) during a given semester.

‘Year Grade Point Average’ or ‘Year GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) during a given academic year.

‘Cumulative Grade Point Average’ or ‘Cumulative GPA’ is the GPA in respect of courses attempted by a candidate (including failed courses) at the time of calculation.

‘Weighted Grade Point Average’ or ‘Weighted GPA’ is the GPA in respect of courses attempted by a candidate calculated with weighted factors defined by the Board of the Faculty.

‘Assessment’ refers to judgment about the quality and extent to which a student has achieved the stated learning objectives or learning outcomes. It includes all types of assessment activities which allow for such a judgment to be made. For the purpose of interpreting the relevant provisions of the Ordinance and the Statutes and where appropriate, reference to ‘examination’ or ‘examinations’ in the Ordinance and the Statutes shall include and cover all forms of ‘assessment’ and its related processes.

A ‘transcript’ is a transcript of the record of study of a candidate, issued by the Registry of the University.

## **UG 2 Advanced standing:**

Advanced standing may be granted to candidates in recognition of studies completed successfully elsewhere before admission to the University. Candidates who are awarded Advanced Standing will not be granted any further credit transfer for those studies for which Advanced Standing has been granted. The amount of credits to be granted for advanced standing shall be determined by

the Board of the Faculty, in accordance with the following principles:

- (a) at least half the number of credits of the degree curriculum normally required for award of the degree shall be accumulated through study at this University or from transfer of credits for courses completed at other institutions in accordance with Regulation UG 4(d); and
- (b) in accordance with Statute III.5 and notwithstanding the granting of advanced and/or transfer credits, a minimum of two semesters of study at this University shall be required before a candidate is considered for the award of a first degree, other than a degree in medicine or surgery, and a minimum of four semesters of study at this University shall be required before a candidate is considered for a first degree in medicine or surgery.

Credits granted for advanced standing shall not normally be included in the calculation of the GPA unless permitted by the Board of the Faculty but will be recorded on the transcript of the candidate.

### **UG 3 Period of study:**

The period of study of the curriculum shall be specified in the regulations governing the degree. To be eligible for award of the degree, a candidate shall fulfill all curriculum requirements within the maximum period of registration, unless otherwise permitted or required by the Board of the Faculty.

### **UG 4 Progression in curriculum:**

- (a) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements is fewer than 24 credits.
- (b) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load for the normative period of study specified in the curriculum regulations, save as provided for under UG4(c).
- (c) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load for the maximum period of registration specified in the curriculum regulations.
- (d) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits may be recorded in the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.
- (e) Unless otherwise permitted by the Board of the Faculty, candidates shall be required to discontinue their studies if they have:
  - (i) failed to complete successfully 36 or more credits in two consecutive semesters (not

- including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
- (ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters, or
  - (iii) exceeded the maximum period of registration specified in the regulations of the degree.

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### **UG 5 Requirements for graduation:**

To be eligible for admission to the degree, candidates shall fulfill the following requirements in addition to the requirements prescribed in the regulations and syllabuses governing the degree curriculum within the maximum period of registration:

- (a) successful completion of 6 credits in English language enhancement;
- (b) successful completion of 3 credits in Chinese language enhancement<sup>2</sup>; and
- (c) successful completion of 12 credits of courses in the Common Core Curriculum, selecting no more than one course from each Area of Inquiry.

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### **UG 6 Exemption:**

Candidates may be exempted, with or without special conditions attached, from any of the requirements in UG 5 by the Senate in exceptional circumstances. Candidates who are so exempted must replace the number of exempted credits with courses of the same credit value.

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### **UG 7 Assessment:**

- (a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only satisfactorily completed courses will earn credits.
- (b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.
- (c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.
- (d) Candidates are required to make up for failed courses in the following manner as prescribed in the curriculum regulations:
  - (i) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or
  - (ii) re-submitting failed coursework, without having to repeat the same course of instruction; or
  - (iii) repeating the failed course by undergoing instruction and satisfying the assessments; or
  - (iv) for elective courses, taking another course *in lieu* and satisfying the assessment requirements.

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<sup>2</sup> Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

**UG 8 Grading system:**

(a) The grades, their standards and the grade points for assessment shall be as follows<sup>3</sup>:

<i>Grade</i>		<i>Standard</i>	<i>Grade Point</i>
A+	}	Excellent	4.3
A			4.0
A-			3.7
B+	}	Good	3.3
B			3.0
B-			2.7
C+	}	Satisfactory	2.3
C			2.0
C-			1.7
D+		Pass	1.3
D			1.0
F		Fail	0

(b) Special permission may be given by Senate for courses in individual curricula to be graded as 'Pass', 'Fail' or 'Distinction'.

<sup>3</sup> UG 8 is not applicable to the BDS and MBBS curricula.

*Regulations for First Degree Curricula (for students admitted to the first year in 2009-2010 or before and admitted directly to the second year in 2010-2011)*

## REGULATIONS FOR FIRST DEGREE CURRICULA<sup>1</sup>

(see also General Regulations G1-20)

### UG 1 Definitions:

For the purpose of regulations and syllabuses for all first degree curricula unless otherwise defined –

An ‘academic year’ comprises two semesters, the first semester to commence in September and end in December, and the second semester to commence in January and end in May/June, on dates as prescribed by the Senate. It includes, normally at the end of each semester, a period during which candidates are assessed. For some curricula, a ‘summer semester’ may be organized in addition to the normal two semesters.

‘Course’ means a course of study, normally with a credit value (expressed as a number of units, known also as credit-units or credits) as defined in the syllabuses for a degree curriculum.

‘Core course’ means any of the courses that are mainly offered to candidates following the degree curriculum concerned and must be completed by them in order to fulfill the curriculum requirements.

‘Elective course’ or ‘Elective’ means any of the courses other than core courses that can be taken by candidates in order to complete the degree curriculum.

‘Syllabus’ means courses or a combination of courses taught by departments, centres, schools and programmes, offered under a degree curriculum.

‘Prerequisite’ means a course or a group of courses which candidates must have taken and/or completed successfully or a requirement which candidates must have fulfilled before being permitted to take the course in question.

‘Corequisite’ means a course which candidates must take in conjunction with the course in question.

‘Credits’ or ‘credit-units’ means the weight assigned to each course relative to the total study load under a degree curriculum. The number of credits is normally indicative of the contact hours, study time and/or candidate workload associated with the course. Candidates who satisfactorily complete courses with a credit value earn the credits of these courses.

‘Semester Grade Point Average’ or ‘Semester GPA’ is the combined grade average of all courses attempted by a candidate (including failed courses) during a given semester, where each course is given a weight, normally equal to its credit-unit value.

‘Cumulative Grade Point Average’ or ‘Cumulative GPA’ is the combined grade average of all courses completed successfully by a candidate (failed courses are excluded) at the time of calculation, where each course is given a weight, normally equal to its credit-unit value.

‘Weighted Grade Point Average’ or ‘Weighted GPA’ is the combined grade average of all courses taken by a candidate weighted by factors (such as the level of the courses) defined by the Board of the Faculty.

A ‘transcript’ is a transcript of the record of study of a candidate, issued by the Registry of the University.

### UG 2 Advanced standing:

Advanced standing may be granted to candidates in recognition of studies completed successfully elsewhere. The amount of advanced credits to be granted shall be determined by the Board of a Faculty, in accordance with the following principles:

- (a) under the provisions in Statute III.5, a minimum of two semesters of study at this University shall be required before the candidate is considered for the award of the degree; and
- (b) a minimum of 60 credits shall be gained in this University.

<sup>1</sup> These regulations are applicable to candidates admitted to the first year of first degree curricula in or after 1998-99, except those in the Bachelor of Medicine and Bachelor of Surgery and the Bachelor of Dental Surgery curricula.

Advanced credits granted shall not normally be included in the calculation of the cumulative GPA, but, if so decided by the Board of Faculty, may be recorded on the transcript of the candidate.

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### UG 3 Requirements for graduation:

To be eligible for admission to the degree, candidates shall fulfill the following requirements in addition to requirements prescribed in the regulations and syllabuses governing the degree curricula:

- (a) Successful completion of a 3-unit English language enhancement course; and a 3-unit Chinese language enhancement course<sup>1</sup>;
- (b) Successful completion, in the manner specified in the regulations and syllabuses governing the degree curricula, of one of the following courses<sup>2</sup>:
  - (i) a 3-unit course or a 6-unit IT-integrated course in Humanities and Social Sciences Studies; or
  - (ii) a 3-unit course or a 6-unit IT-integrated course in Science and Technology Studies.
- (c) Successful completion, in the manner specified in the regulations and syllabuses governing the degree curricula, of one of the following courses<sup>2</sup>:
  - (i) a 3-unit course or a 6-unit IT-integrated course in Culture and Value Studies; or
  - (ii) a 3-unit course which is outside the candidates' own degree curricula, as an elective course; or
  - (iii) a Common Core Course which is outside the candidates' own degree curricula.
- (d) Either
  - (i) successful completion of a 6-unit IT-integrated course in Humanities and Social Sciences Studies, Science and Technology Studies, or Culture and Value Studies, under (b)(i) or (ii) or (c)(i) above;
  - or (ii) obtaining a pass in an information technology proficiency test;
  - or (iii) successful completion of a 3-unit course in information technology;
  - or (iv) satisfying the information technology proficiency requirements as specified in the regulations and syllabuses governing the degree curricula.

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### UG 4 Exemption:

Candidates may be exempted, with or without special conditions attached, from any of the requirements in UG 3 by the Senate in exceptional circumstances.

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### UG 5 Grading system:

The grades, their standards and the grade points for assessment shall be as follows<sup>3,4</sup>:

<i>Grade</i>	<i>Standard</i>	<i>Grade Point</i>
A+	Excellent	4.0
A		4.0
A-		3.7
B+	Good	3.3
B		3.0
B-		2.7
C+	Satisfactory	2.3
C		2.0
C-		1.7
D+	Pass	1.3
D		1.0
F	Fail	0

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<sup>1</sup> Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement, see *Regulation UG4*.

<sup>2</sup> Students failing to successfully complete courses in Humanities and Social Sciences Studies, Science and Technology Studies or Culture and Value Studies by 2009-10 shall be required to satisfy the requirements in (b) and (c) by taking 6-credit courses in the Common Core Curriculum to be offered from 2010-11 onwards.

<sup>3</sup> UG5 is not applicable to the BDS and MBBS curricula.

<sup>4</sup> Special permission may be given for courses in individual curricula to be graded as 'Pass', 'Fail' or 'Distinction'.

# SECTION VI Teaching Weeks

## Teaching Weeks 2012-2013 for Undergraduate and Taught Postgraduate Students

	SUN	MON	TUE	WED	THUR	FRI	SAT	Week No
SEP-12							1	1
	2	3	4	5	6	7	8	2
	9	10	11	12	13	14	15	3
	16	17	18	19	20	21	22	4
	23	24	25	26	27	28	29	5
	30							
OCT-12								6
		[1]	[2]	3	4	5	6	7
	7	8	9	10	11	12	13	8
	14	15	16	17	18	19	20	9
	21	22	[23]	24	25	26	27	10 (Reading)
28	29	30	31				Reading/ Field Trip Week: Oct 29 - Nov 3	
NOV-12					1	2	3	11
	4	5	6	7	8	9	10	12
	11	12	13	14	15	16	17	13
	18	19	20	21	22	23	24	14
	25	26	27	28	29	30		
DEC-12							1	15
	2	3	4	5	6	7	8	Last Day of Teaching: Dec 8, 2012
	9	10	11	12	13	14	15	16 (Revision) Revision Period: Dec 10 - 14
	16	17	18	19	20	21	22	17 Assessment Period: Dec 15 - Dec 22 *
	23	(24)	[25]	[26]	27	28	29	18 (up to Jan 5, 2013, if needed)
30	<31>							
JAN-13			[1]	2	3	4	5	19
	6	7	8	9	10	11	12	20 (Break)
	13	14	15	16	17	18	19	21 (Break)
	20	21	22	23	24	25	26	22
	27	28	29	30	31			23
FEB-13						1	2	24
	3	4	5	6	7	8	9	Class Suspension Period for the Lunar New Year: Feb 9 - 15
	10	[11]	[12]	[13]	14	15	16	25 (Suspension)
	17	18	19	20	21	22	23	26
	24	25	26	27	28			27
MAR-13						1	2	28
	3	4	5	6	7	8	9	29 (Reading)
	10	11	12	13	14	15	(16)	Reading/ Field Trip Week: Mar 11 - 16
	17	18	19	20	21	22	23	30
	24	25	26	27	28	[29]	[30]	31
31								
APR-13		[1]	2	3	[4]	5	6	32
	7	8	9	10	11	12	13	33
	14	15	16	17	18	19	20	34
	21	22	23	24	25	26	27	35
	28	29	30					36
MAY-13				[1]	2	3	4	37 (Revision)
	5	6	7	8	9	10	11	Last Day of Teaching: May 4, 2013
	12	13	14	15	16	[17]	18	Revision Period: May 6 - 11
	19	20	21	22	23	24	25	38 Assessment Period: May 13 - Jun 1
	26	27	28	29	30	31		39
JUN-13							1	40
	2	3	4	5	6	7	8	41 (Break)
	9	10	11	[12]	13	14	15	42 (Break)
	16	17	18	19	20	21	22	43 (Break)
	23	24	25	26	27	28	29	44 (Break)
30								
JUL-13		[1]	2	3	4	5	6	45
	7	8	9	10	11	12	13	46
	14	15	16	17	18	19	20	47
	21	22	23	24	25	26	27	48
	28	29	30	31				49
AUG-13					1	2	3	50
	4	5	6	7	8	9	10	51
	11	12	13	14	15	16	17	52
	18	19	20	21	22	23	24	53 (Break)
	25	26	27	28	29	30	31	

- [ ] General Holiday
- ( ) University Holiday (Full Day)
- <> University Holiday (afternoon only)
- Reading/ Field Trip Week
- Revision Period
- Class Suspension Period for the Lunar New Year
- Assessment Period
- Assessment Period (if necessary)

**Notes:**  
 First Semester: 10 Mondays, 9 Tuesdays, 11 Wednesdays, Thursdays, Fridays and Saturday;  
 Second Semester: 12 Mondays, 13 Tuesdays, 12 Wednesdays, Thursdays, Fridays and Saturday;  
 \* Depending on the papers to be examined, if possible, assessment period will end on Dec 22, but if necessary, it will extend beyond the Christmas and the New Year Holidays, up to Jan 5

## *Useful contacts and websites*

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Faculty of Science

Office Location : G12, Ground Floor,  
Chong Yuet Ming Physics Building

Tel : 2859 2683

Fax : 2858 4620

Email : science@hku.hk

Website : <http://www.scifac.hku.hk/>

*(Please visit <http://www.scifac.hku.hk/> for the latest updates of BSc courses, timetables, notices and forms)*

### Departments/School

Biochemistry Website : <http://www.biochem.hku.hk/>

Biological Sciences Website : <http://www.biosch.hku.hk/>

Chemistry Website : <http://chem.hku.hk/>

Earth Sciences Website : <http://www.earthsciences.hku.hk/>

Mathematics Website : <http://www.math.hku.hk/>

Physics Website : <http://www.physics.hku.hk/>

Statistics and Actuarial Science Website : <http://www.saasweb.hku.hk/>

Academic Advising Office

Tel : 2219 4686

Website : <http://aao.hku.hk>

Academic Services Office

Office Location : G4, Run Run Shaw Building

Tel : 2859 2433

Fax : 2540 1405

Email : [asoffice@hku.hk](mailto:asoffice@hku.hk)

Website : <http://www.asa.hku.hk/>

Common Core courses Website : <http://commoncore.hku.hk>

HKU Worldwide Undergraduate Exchange Programme Website : <http://www.als.hku.hk/admission/exchange/>

Centre of Development and Resources for Students (CEDARS)

Tel : 2859 2305

Website : <http://cedars.hku.hk>

University Health Service

Tel : 2859 2501 (General enquiries)  
2549 4686 (Medical appointments only)

Website : <http://www.uhs.hku.hk/>

Plagiarism Website : <http://www.hku.hk/plagiarism>