4

BSc in Actuarial Science

Syllabuses and Regulations
(4-year curriculum)

2013-14

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 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

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

(1) 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)

(2) 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)

(3) develop analytical skills to evaluate and measure various kinds of risk, and appraise the related moral and ethical issues
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

(4) formulate effective business strategies to manage various kinds of risk
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

(5) communicate and collaborate with people effectively on issues related to actuarial science
(by means of coursework and tutorial classes and/or research-based project in the curriculum)

(6) pass the early professional examinations organized by international actuarial organizations, and 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)

(7) 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)

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

1. General guideline for contact hours requirement in the BSc (Actuarial Science) Degree Curriculum

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

2. Credit Unit Statement of the BSc (Actuarial Science) Degree Curriculum

The BSc(Actuarial Science) degree curriculum consists of five major types of courses based on the learning activities. The courses in the curriculum are 6 credits. Examples of the contact hours requirements for the five categories of courses are described as follows.

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

(b) Lecture with laboratory component courses (6 credits)
Contact hours for 6-credit course: 24 hours of lectures, 24 hours of laboratory and 6 hours of tutorial
These courses are taught by a combination of lectures and laboratory/practical sessions. Assessment is by a combination of examination (0-70%) and continuous assessment (30-100%). Continuous assessment tasks include written assignments (totaling no more than 8,000 words) such as essays, laboratory reports, and project reports, and oral presentations. Details of the assessment tasks can be found in the description of individual courses.

(c) Laboratory and Workshop courses (6 credits)
Contact hours: 48 hours of laboratory or workshop and 12 hours of tutorial
These courses aim at enriching the student's research skills and encourage group work through hands-on activities in which science research is introduced. Students are expected to spend an additional 100 hours on self-study, preparation work for the laboratory, and writing reports. Continuous assessment tasks (100%) include written assignments (totaling no more than 8,000 words) such as laboratory report for each experiment (normally no more than 10 experiments) and essays. Details of the assessment tasks can be found in the description of individual courses.

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

(e) Internship (6 credits)

Students have to undertake at least 160 hours of internship work

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

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2013-2014	Exam held in 2013-2014	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2013-2014	2014-2015	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Centre for Applied English Studies											
CAES1000	Core University English	6	NIL	Y	Y	1, 2	Dec, May	---	Mr S Boynton, English		
CAES9820	Academic English for science students	6	NIL	Y	Y	2	May	---	Mr S Boynton, English		
School of Chinese											
CSCI9001	Practical Chinese for science students	6	NIL	N	Y	---	---	---	Mr K W Wong, Chinese		
Department of Mathematics											
MATH1821	Mathematical methods for actuarial science I	6	Level 4 or above in HKDSE Mathematics plus Module 1, or Level 4 or above in HKDSE Mathematics plus Module 2, or equivalent; and Not for students who have passed MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics), or have already enrolled in these courses.	Y	Y	1	Dec	---	Dr J T Chan, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
MATH2822	Mathematical methods for actuarial science II	6	Pass in MATH1821 Mathematical methods for actuarial science I	Y	Y	2	May	---	Dr J T Chan, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
Department of Statistics and Actuarial Science											
STAT2901	Probability and statistics: foundations of actuarial science	6	(Pass in MATH1821 Mathematical methods for actuarial science I (for BSc(ActuarSc) students) or already enrolled in this course) or (Pass in MATH1013 University mathematics II or already enrolled in this course (for students outside the BSc(ActuarSc) programme); and Not for students who have passed or enrolled in any of these courses: STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics	Y	Y	2	May	---	Prof H L Yang, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies
STAT2902	Financial mathematics	6	Pass in STAT2901 Probability and statistics: foundations of actuarial science or already enrolled in this course; and Not for students who have passed in STAT3615 Practical mathematics for investment, or already enrolled in this course.	Y	Y	2	May	---	Prof K C Yuen, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	

* This list only includes courses offered by the Department of Statistics & Actuarial Science and the Department of Mathematics and language courses.
^ Availability of courses in 2014-2015 is subject to change.

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2013-2014	Exam held in 2013-2014	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2013-2014	2014-2015	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
STAT3602	Statistical inference	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models	Y	Y	1	Dec	---	Prof S M S Lee, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Statistics 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Statistics 2013 Minor in Statistics
STAT3612	Data mining	6	Pass in STAT2602 Probability and statistics II or (STAT1603 Introductory statistics and any University level 2 course) or STAT3902 Statistical models	Y	Y	2	No exam	48	Dr G C S Lui, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Major in Statistics 2012 Minor in Risk Management 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Major in Statistics 2013 Minor in Risk Management 2013 Minor in Statistics
STAT3616	Advanced SAS programming	6	Pass in STAT2603 Data management with SAS	N	Y	---	---	96	Prof K W Ng, Statistics and Actuarial Science	2012 Major in Statistics 2013 Major in Statistics	2012 BSc in Actuarial Science 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Minor in Statistics
STAT3901	Life contingencies	6	(Pass in STAT2601 Probability and statistics II and STAT3615 Practical mathematics for investment) or (Pass in STAT2902 Financial mathematics and (Pass in STAT3902 Statistical models, or already enrolled in this course)) or (Pass in STAT2602 Probability and statistics II and STAT2902 Financial mathematics)	Y	Y	1	Dec	---	Dr E C K Cheung, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies
STAT3902	Statistical models	6	Pass in STAT2901 Probability and statistics: foundations of actuarial science; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec	---	Dr G Tian, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
STAT3903	Stochastic models	6	For BSc(Actuarial Science) students only; and Pass in STAT2901 Probability and statistics: foundations of actuarial science; and Not for students who have passed in MATH3603 Probability theory, or have already enrolled in this course; and Not for students who have passed in STAT3603 Probability modelling, or have already enrolled in this course.	Y	Y	2	May	---	Dr K S Chong, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2013-2014	Exam held in 2013-2014	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2013-2014	2014-2015	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
STAT3904	Corporate finance for actuarial science	6	[(Pass in ACCT1101 Introduction to accounting and STAT2902 Financial mathematics) or (Pass in STAT3610 Risk management and insurance and STAT3615 Practical mathematics for investment)]; and Not for students who have passed in FINA1310 Corporate finance, or have already enrolled in this course.	Y	Y	2	May	---	Dr J K Woo, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies
STAT3905	Introduction to financial derivatives	6	Pass in STAT2902 Financial mathematics; and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.	Y	Y	1	Dec	---	Dr E C K Cheung, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
STAT3906	Risk theory I	6	Pass in STAT3903 Stochastic models, or already enrolled in this course; or Pass in STAT3603 Probability modelling or MATH3603 Probability theory	Y	Y	2	May	---	Dr K C Cheung, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies
STAT3907	Linear models and forecasting	6	(Pass in STAT2602 Probability and statistics II; or Pass in STAT3902 Statistical models, or already enrolled in this course); and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT3600 Linear statistical analysis, or have already enrolled in this course; and Not for students who have passed in STAT4601 Time-series analysis, or have already enrolled in this course; and Not for students who have passed in ECON2280 Introductory econometrics, or have already enrolled in this course.	Y	Y	2	May	---	Dr E A L Li, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
STAT3908	Credibility theory and loss distributions	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3906 Risk theory	Y	Y	1	Dec	---	Dr K C Cheung, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2013-2014	Exam held in 2013-2014	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2013-2014	2014-2015	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
STAT3909	Advanced life contingencies	6	Pass in STAT3901 Life contingencies, 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	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	
STAT3910	Financial economics I	6	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.	Y	Y	1	Dec	---	Prof H L Yang, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies
STAT3911	Financial economics II	6	Pass in MATH3603 Probability theory or STAT3903 Stochastic models or STAT3910 Financial economics I	Y	Y	2	May	---	Prof H L Yang, Statistics and Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science	2012 Major in Risk Management 2012 Minor in Actuarial Studies 2013 Major in Risk Management 2013 Minor in Actuarial Studies
STAT3951	Advanced contingencies	6	Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec	---	Prof H L Yang, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT3952	Investment and asset management	6	Pass in STAT3901 Life contingencies; and For BSc(Actuarial Science) students only; and Not for students who have passed in FINA2320 Investments and portfolio analysis, or have already enrolled in this course.	N	Y	---	---	---	TBC, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT3953	Fundamentals of actuarial practice	6	Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.	Y	Y	1	No exam	---	Dr L F K Ng, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT3954	Current topics in actuarial science	6	(Pass in STAT3901 Life contingencies, or already enrolled in this course; or Pass in STAT3909 Advanced life contingencies, or already enrolled in this course); and For BSc(Actuarial Science) students only.	N	Y	---	---	---	Prof W K Li, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT3955	Survival analysis	6	Pass in STAT3902 Statistical models, or already enrolled in this course; or Pass in STAT3600 Linear statistical analysis or STAT3901 Life contingencies	Y	Y	2	May	---	Dr E K F Lam, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Statistics 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Major in Statistics 2013 Minor in Statistics

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2013-2014	Exam held in 2013-2014	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2013-2014	2014-2015	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
STAT3956	Pension funds and pension mathematics	6	Pass in STAT3909 Advanced life contingencies	Y	Y	1	Dec	---	Dr G Ma, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT4602	Multivariate data analysis	6	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	2	May	3	Prof T W K Fung, Statistics and Actuarial Science	2012 Major in Statistics 2013 Major in Statistics	2012 BSc in Actuarial Science 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Minor in Statistics
STAT4607	Credit risk analysis	6	Pass or already enrolled in STAT3910 Financial economics I or STAT3618 Derivatives and risk management or STAT3905 Introduction to financial derivatives or (FINA2322 Derivatives and any University level 3 course)	Y	Y	2	May	---	Dr K P Wat, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Minor in Risk Management 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Minor in Risk Management
STAT4608	Market risk analysis	6	(Pass in STAT3907 Linear models and forecasting and STAT3910 Financial economics I); or [Pass in STAT4601 Time-series analysis and (FINA2320 Investments and portfolio analysis or STAT3609 The statistics of investment risk)]	N	Y	---	---	---	Dr Z Zhang, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2012 Major in Risk Management 2012 Minor in Risk Management 2013 BSc in Actuarial Science 2013 Major in Risk Management 2013 Minor in Risk Management
STAT4901	Risk theory II	6	Pass in STAT3906 Risk theory I	N	N	---	---	---	Dr J K Woo, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT4902	Selected topics in actuarial science	6	Pass in STAT3906 Risk theory I	N	N	---	---	---	TBC, Statistics and Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science
STAT4971	Project in statistics and actuarial science	6	Pass in STAT3902 Statistical models and STAT3907 Linear models and forecasting; and Pass or already enrolled in at least one of the following courses: STAT3616 Advanced SAS programming, STAT3911 Financial economics II, STAT4601 Time-series analysis, STAT4602 Multivariate data analysis; and For BSc(Actuarial Science) students only.	N	Y	---	---	---	Prof S M S Lee, Statistics and Actuarial Science		
STAT4972	Internship in actuarial science	6	Pass in STAT3901 Life contingencies; and For BSc(Actuarial Science) students only.	N	Y	---	---	---	Dr L F K Ng, Statistics and Actuarial Science		

SECTION IV Equivalency of HKDSE and other qualifications

Table of Equivalence between HKDSE and Other Qualifications

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

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

Remarks:

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

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

SECTION V BSc(ActuarSc) Programmes on offer in 2013/14

Programme Title	BSc in Actuarial Science
Offered to students admitted to Year 1 in	**2013**

Objectives:
The Actuarial Science curriculum 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:
By the end of this programme, students should be able to:

(1) 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)
(2) 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)
(3) develop analytical skills to evaluate and measure various kinds of risk, and appraise the related moral and ethical issues
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(4) formulate effective business strategies to manage various kinds of risk
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(5) communicate and collaborate with people effectively on issues related to actuarial science
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(6) pass the early professional examinations organized by international actuarial organizations, and 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)
(7) 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)

Impermissible Combination:
Minor in Actuarial Studies

Required courses (144 credits)

1. Year 1 Courses

Core courses (42 credits):

ACCT1101	Introduction to accounting (6)
ECON1210	Introduction to economics I (6)
ECON1220	Introduction to economics II (6)
MATH1821	Mathematical methods for actuarial science I (6)
MATH2822	Mathematical methods for actuarial science II (6)
STAT2901	Probability and statistics: foundations of actuarial science (6)
STAT2902	Financial mathematics (6)

2. Year II Courses

Core courses (42 credits):

COMP1117	Computer programming I (6)

STAT3901	Life contingencies (6)
STAT3902	Statistical models (6)
STAT3903	Stochastic models (6)
STAT3904	Corporate finance for actuarial science (6)
STAT3905	Introduction to financial derivatives (6)
STAT3906	Risk theory I (6)

3. Year III Courses

Core courses (30 credits):

STAT3907	Linear models and forecasting (6)
STAT3908	Credibility theory and loss distributions (6)
STAT3909	Advanced life contingencies (6)
STAT3910	Financial economics I (6)
STAT3911	Financial economics II (6)

4. Year IV Courses

At least 24 credits selected from the following courses:

STAT3602	Statistical inference (6)
STAT3612	Data mining (6)
STAT3616	Advanced SAS programming (6)
STAT3951	Advanced contingencies (6)
STAT3952	Investment and asset management (6)
STAT3953	Fundamentals of actuarial practice (6)
STAT3954	Current topics in actuarial science (6)
STAT3955	Survival analysis (6)
STAT3956	Pension funds and pension mathematics (6)
STAT4602	Multivariate data analysis (6)
STAT4607	Credit risk analysis (6)
STAT4608	Market risk analysis (6)
STAT4901	Risk theory II (6)
STAT4902	Selected topics in actuarial science (6)

5. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT4971	Project in statistics and actuarial science (6)
STAT4972	Internship in actuarial science (6)

Notes:

1. Students should be in full-time status for at least eight academic semesters (in additional to their 6-month or

longer full-time internships) in order to fulfill the degree requirements.

2. Students may optionally take Majors or Minors outside the BSc(ActuarSc) programme, provided that they fully satisfy the requirements.

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

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 admitted to Year 1 in	**2012**

Objectives:
The Actuarial Science curriculum 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:
By the end of this programme, students should be able to:

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(2) understand and identify the nature of insurance, finance and investment risks
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(3) develop analytical skills to evaluate and measure various kinds of risk, and appraise the related moral and ethical issues
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(4) formulate effective business strategies to manage various kinds of risk
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(5) communicate and collaborate with people effectively on issues related to actuarial science
(by means of coursework and tutorial classes and/or research-based project in the curriculum)
(6) pass the early professional examinations organized by international actuarial organizations, and 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)
(7) 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)

Impermissible Combination:
Minor in Actuarial Studies

Required courses (144 credits)

1. Year 1 Courses

Core courses (42 credits):

ACCT1101	Introduction to accounting (6)
ECON1210	Introduction to economics I (6)
ECON1220	Introduction to economics II (6)
MATH1821	Mathematical methods for actuarial science I (6)
MATH2822	Mathematical methods for actuarial science II (6)
STAT2901	Probability and statistics: foundations of actuarial science (6)
STAT2902	Financial mathematics (6)

2. Year II Courses

Core courses (42 credits):

COMP1117	Computer programming I (6)
STAT3901	Life contingencies (6)
STAT3902	Statistical models (6)
STAT3903	Stochastic models (6)
STAT3904	Corporate finance for actuarial science (6)
STAT3905	Introduction to financial derivatives (6)
STAT3906	Risk theory I (6)

3. Year III Courses

Core courses (30 credits):

STAT3907	Linear models and forecasting (6)
STAT3908	Credibility theory and loss distributions (6)
STAT3909	Advanced life contingencies (6)
STAT3910	Financial economics I (6)
STAT3911	Financial economics II (6)

4. Year IV Courses

At least 24 credits selected from the following courses:

STAT3602	Statistical inference (6)
STAT3612	Data mining (6)
STAT3616	Advanced SAS programming (6)
STAT3951	Advanced contingencies (6)
STAT3952	Investment and asset management (6)
STAT3953	Fundamentals of actuarial practice (6)
STAT3954	Current topics in actuarial science (6)
STAT3955	Survival analysis (6)
STAT3956	Pension funds and pension mathematics (6)
STAT4602	Multivariate data analysis (6)
STAT4607	Credit risk analysis (6)
STAT4608	Market risk analysis (6)
STAT4901	Risk theory II (6)
STAT4902	Selected topics in actuarial science (6)

5. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT4971	Project in statistics and actuarial science (6)
STAT4972	Internship in actuarial science (6)

1. Students should be in full-time status for at least eight academic semesters (in additional to their 6-month or longer full-time internships) in order to fulfill the degree requirements.

2. Students may optionally take Majors or Minors outside the BSc(ActuarSc) programme, provided that they fully satisfy the requirements.

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

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 VI Course Descriptions

CAES1000 Core University English (6 credits)		**Academic Year**	**2013**
Offering Department	English	**Quota**	---
Course Co-ordinator	Mr P D Desloge, English *(pdesloge@hkucc.hku.hk)*		
Teachers Involved	Mr P D Desloge, Centre for Applied English Studies		
Course Objectives			
Course Contents & Topics	The Core University English (CUE) course aims to enhance first-year students' academic English language proficiency in the university context. CUE focuses on developing students' academic English language skills for the Common Core Curriculum. These include the language skills needed to understand and produce spoken and written academic texts, express academic ideas and concepts clearly and in a well-structured manner and search for and use academic sources of information in their writing and speaking. Students will also complete four online-learning modules through the Moodle platform on academic grammar, academic vocabulary, citation and referencing skills and understanding and avoiding plagiarism. This course will help students to participate more effectively in their first-year university studies in English, thereby enriching their first-year experience.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Identify and distinguish between main ideas and supporting details in lectures and written texts and demonstrate an understanding of the arguments / facts expressed; 2. Form and express personal opinions through critical reading and listening; 3. Argue for and defend a position in a clear and structured way using academic sources, through writing and speaking; and 4. Demonstrate control of grammatical accuracy and lexical appropriacy in academic communication.		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2013 - 2014	Y 1st sem 2nd sem	**Examination**	Dec May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Excellent to outstanding result. Students are able to produce spoken and written academic texts which are at all times appropriately structured. Students can clearly and concisely explain academic concepts and critically argue for a detailed position. Students always use appropriate academic sources to support their ideas in writing and speaking. They cite and reference correctly at all times. Students demonstrate an ability to fully comprehend and critically interpret spoken and written texts. Written language contains very few, if any, systematic errors in grammar and vocabulary. Spoken language is always comprehensible and fluent.
B	Good to very good result. Students are able to produce spoken and written academic texts which are appropriately structured with only minor errors. Students can almost always clearly and concisely explain academic concepts and almost always critically argue for a detailed position. Students almost always use appropriate academic sources to support their ideas in writing and speaking. They cite and reference correctly with only a few non-systematic errors. Students can comprehend and interpret texts with ease, although they may miss some implied meanings and opinions. Written language is mostly accurate but contains a few systematic errors in complex grammar and vocabulary. Spoken language is mostly comprehensible and fluent.
C	Satisfactory to reasonably good result. Spoken and written academic texts produced by students are sometimes not-well structured but there is some evidence of this ability. Students are sometimes unable to clearly and concisely explain academic concepts. While they can argue for a position, it is not very detailed and tend to be simplistic rather than critical. Students sometimes use sources which are nonacademic and/or not appropriate to support their ideas in writing and speaking. There are some systematic errors in citation and referencing but also evidence of correct systematic use. Students have some difficulty comprehending and critically interpreting texts. They can always understand the main ideas but may miss some of the writer's views and attitudes. Written language is sometimes inaccurate, although errors, when they occur, are more often in complex grammar and vocabulary and there is some evidence of control of simple grammatical structures. Spoken language is generally comprehensible and fluent but at times places strain on the listener.
D	Barely satisfactory result. Spoken and written academic texts produced by students are often inappropriately structured but there may be some evidence of this ability. Students are often unable to clearly and concisely explain academic concepts and argue for a position. There is some evidence of an ability to explain academic concepts but not to critically argue for a position. Students often use sources which are nonacademic and/or not appropriate to support their ideas in writing and speaking. There are many systematic errors in citation and referencing however there is evidence of an understanding of some of the conventions of citation and referencing. Students often have difficulty comprehending and interpreting texts, sometimes failing to understand the main ideas and writer's views and attitudes. Written language is often inaccurate containing errors in a range of simple and complex grammar and vocabulary. Spoken language is only sometimes comprehensible and fluent, and strain is frequently placed on the listener.
Fail	Unsatisfactory result. Productive skills are too limited to be able to successfully carry out spoken and written assessments. Texts are unstructured and unclear. Students are unable to follow and interpret texts. There are language errors in almost every sentence. Spoken language is often incomprehensible. Assessments may not have been attempted or contain plagiarism.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		30
Tutorials		6
Reading / Self study		84

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		35
Assignments		65

CAES9820 Academic English for science students (6 credits)		**Academic Year**	**2013**
Offering Department	English	**Quota**	---
Course Co-ordinator	Mr P D Desloge, English *(pdesloge@hkucc.hku.hk)*		
Teachers Involved	Mr P D Desloge, Centre for Applied English Studies		
Course Objectives	This six credit English-in-the-Discipine course will be offered to second year students studying in the Science Faculty. This course will help students develop the necessary skills to use both written and spoken English within their studies. Students will learn to better communicate and discuss general and scientific concepts within their division, with other scientists as well as to a larger audience. Particular emphasis will be placed on enabling students to identify their own language needs and develop appropriate self-learning strategies to improve their proficiency.		
Course Contents & Topics	Topics covered in the course will be: - Finding, evaluating and using appropriate academic source materials. - Compiling an academic bibliography. - Contrasting academic and popular genres. - Writing for a specific audience, including stance, shared knowledge, levels of formality. - Organizing and articulating ideas in an academically suitable format including appropriate vocabulary and grammar. - Critically examine their own language proficiency and analyze how that relates to their ability to perform successfully within their discipline. Developing self-directed learning strategies.		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Identify and summarize disciplinary sources related to a specified topic. 2 Produce texts (written and spoken) appropriate for a cross-disciplinary audience based on their disciplinary knowledge. 3. Identify their own language learning needs and implement a plan to meet those needs.		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Excellent result. Consistently demonstrates ability to summarize salient points accurately from appropriate and reliable sources using original language. Text uses sources appropriately and demonstrates accurate and appropriate grammatical, lexical and organizational characteristics. Language learning needs are clearly identified and aligned with evidence of planning, self-study and reflection.
B	Good to very good result. Usually demonstrates ability to summarize salient points accurately using mostly original language. Text mostly uses sources appropriately and demonstrates mostly accurate and appropriate grammatical, lexical and organizational characteristics. Language learning needs are stated with some reference to evidence of planning and reflection although there is some misalignment between goals and self-study completed.
C	Satisfactory to reasonably good result. Demonstrates some ability to summarize salient points using mostly original language although some inaccuracies are present. Text uses some sources appropriately and demonstrates appropriate but simple grammatical and lexical characteristics with some organizational flaws. Language learning needs are stated with some limited evidence of planning and reflection but goals and self-study are misaligned.
D	Barely satisfactory result. Demonstrates a limited ability to summarize salient points from sources with inaccuracies and little original language. Text uses sources inappropriately and demonstrates grammatical inaccuracy, inappropriate lexical choices and organizational flaws. There is a minimal statement of language learning needs, planning and reflection with little or no apparent alignment between goals and self-study.
Fail	Unsatisfactory result. Does not demonstrate ability to summarize salient points identify, interpret or appropriately paraphrase reliable sources. Text uses no sources and demonstrates serious grammatical, lexical and/or organizational errors. Does not demonstrate any meaningful attempt to identify language learning needs or implement a plan.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Tutorials		36
Reading / Self study		120

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Test		30
Assignments		70

Required/recommended reading and online materials	Course materials to be provided electronically through course website.
Course Website	http://caes.hku.hk/caes9820/
Additional Course Information	This a compulsory course for all students studying undergraduate degrees in the Faculty of Science.

MATH1821 Mathematical methods for actuarial science I (6 credits)		**Academic Year**	**2013**
Offering Department	Mathematics	**Quota**	---
Course Co-ordinator	Dr J T Chan, Mathematics *(jtchan@hku.hk)*		
Teachers Involved	Dr J T Chan, Mathematics		
Course Objectives	This course is the first of the two mathematics courses designed to provide actuarial science students with a solid background of calculus of one and several variables and an introduction to linear algebra. The course focuses on single variable calculus and elementary matrix theory. It aims at students with Core Mathematics plus Module 1 or Core Mathematics plus Module 2 background.		
Course Contents & Topics	- Functions; graphs; inverse functions - Limits, continuity and differentiability - Mean value theorem; implicit differentiation; L'Hopital's rule - Bisection method and Newton's method - Higher order derivatives, maxima and minima, graph sketching - Taylor approximation and error estimation - Improper integrals, partial fractions, integration by parts - Numerical integration, Trapezoidal rule and Simpson's rule - Complex numbers, polar form, de Moivre's formula - Basic matrix and vector (of order 2 and 3) operations, determinants - Simple differential equations		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Describe properties of a function and an inverse function. 2. Evaluate various kinds of limits, and determine continuity and differentiability of functions. 3. Apply advanced rules/techniques of differentiation and integration to compute derivatives and integrals; sketch graphs of functions. 4. Approximate integrals by numerical methods. 5. Perform matrix and vector operations, compute determinants. 6. Solve simple first and second order ordinary differential equations.		
Pre-requisites (and Co-requisites and Impermissible combination)	Level 4 or above in HKDSE Mathematics plus Module 1, or Level 4 or above in HKDSE Mathematics plus Module 2, or equivalent. Not for students who have passed MATH1013 University mathematics II or (MATH1851 Calculus and ordinary differential equations and MATH1853 Linear algebra, probability and statistics), or have already enrolled in these courses.		
Offer in 2013 - 2014	Y 1st sem	**Examination**	Dec
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.
B	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.
C	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.
D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.
Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		50
Test	2 tests	50

Required/recommended reading and online materials	George B. Thomas; as revised by Maurice D. Weir and Joel Hass: Thomas' Calculus, 12th edition (Addison Wesley) Steven J. Leon: Linear Algebra with Applications (Pearson Prentice Hall) NIL
Course Website	http://hkumath.hku.hk/course/MATH1821/

MATH2822 Mathematical methods for actuarial science II (6 credits)		**Academic Year**	**2013**
Offering Department	Mathematics	**Quota**	---
Course Co-ordinator	Dr J T Chan, Mathematics *(jtchan@hku.hk)*		
Teachers Involved	Dr J T Chan, Mathematics		
Course Objectives	This course is the second of the two mathematics courses designed to provide actuarial science students with a solid background of calculus of one and several variables and an introduction to linear algebra. The course focuses on multivariable calculus and linear algebra. It aims at students with MATH1821. It can be followed by other 2000 or 3000 level mathematics courses.		
Course Contents & Topics	- Matrices, systems of linear equations, determinants - Eigenvalues and eigenvectors, diagonalization of matrices - Quadratic functions and their standard forms - Vector spaces and subspaces - Functions of several variables; partial differentiation - Gradients and directional derivatives - Taylor approximation, systems of nonlinear equations, Newton's method - Maxima and minima; Lagrange multipliers - Double and triple integrals, areas and volumes		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand various topics in linear algebra such as the basic arithmetic of matrices, determinants, systems of linear equations, eigenvalues and eigenvectors, diagonalizable matrices, basis and dimension, and the rank-nullity theorem. 2. Understand various topics in functions of several variables including partial differentiation, the Hessian test for local extrema, Newton's method for solving systems of nonlinear equations, vector-valued functions, Jacobians, the method of Lagrange multipliers, double/triple integrals and the change of variable formula.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH1821 Mathematical methods for actuarial science I		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate an excellent understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, clearly and elegantly presenting correct logical reasoning and argumentation and being able to carry out computations carefully and correctly, and with some innovative approaches to solving problems.
B	Demonstrate a good understanding of key concepts and ideas by being able to identify the appropriate theorems and their applications through correctly analysing problems, but with some minor inadequacies in arguments, identifying the appropriate theorems or their applications and presentation or with some minor computational errors.
C	Demonstrate an acceptable understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with some inadequacies in applying the theorems through incorrectly analysing problems with poor argument and presentation or a number of minor computational errors.
D	Demonstrate some understanding of key concepts and ideas by being able to correctly identify appropriate theorems, but with substantial inadequacies in applying the theorems through incorrectly analysing problems with poor argument or presentation or with substantial computational errors.
Fail	Demonstrate poor and inadequate understanding by not being able to identify appropriate theorems or their applications, or not being able to complete the solution.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		50
Test	2 tests	50

Required/recommended reading and online materials

K Binmore and J Davies: Calculus - Concepts and Methods (Cambridge University Press, 2001)
George B. Thomas; as revised by Maurice D. Weir and Joel Hass: Thomas' Calculus, 12th edition (Addison Wesley)
Steven J. Leon: Linear Algebra with Applications (Pearson Prentice Hall)
NIL

Course Website: http://hkumath.hku.hk/course/MATH2822/

STAT2901 Probability and statistics: foundations of actuarial science (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr Y K Chung, Statistics & Actuarial Science *(yukchung@hku.hk)*		
Teachers Involved	Dr Y K Chung, Statistics & Actuarial Science		
Course Objectives	The purpose of this course is to develop knowledge of the fundamental tools in probability and statistics 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.		
Course Contents & Topics	1. General Probability - Basic elements of probability in set notation - Mutually exclusive events - Addition and multiplication rules - Independence of events - Combinatorial probability - Conditional probability and expectations - Bayes Theorem / Law of total probability - Random variables 2. Univariate probability distributions (including binomial, negative binomial, geometric, hypergeometric, Poisson, uniform, exponential, chi-square, beta, Pareto, lognormal, gamma, Weibull and normal) and bivariate normal distribution - Probability functions and probability density functions - Cumulative distribution functions - Mode, median, percentiles and moments - Variance and measures of dispersion - Central Limit Theorem 3. Sampling distributions and introduction of estimation		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the mathematical theory underlying the modern practice of statistics. 2. Develop skills in probabilistic analysis for problems involving randomness. 3. Apply techniques in probability and statistics to solve actuarial science problems.		
Pre-requisites (and Co-requisites and Impermissible combination)	(Pass in MATH1821 Mathematical methods for actuarial science I (for BSc(ActuarSc) students) or already enrolled in this course) or (Pass in MATH1013 University mathematics II or already enrolled in this course (for students outside the BSc(ActuarSc) programme); and Not for students who have passed or enrolled in any of these courses: STAT1601 Elementary statistical methods, STAT1602 Business statistics, STAT2601 Probability and statistics I, STAT1603 Introductory statistics		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials	tutorials/example classes	12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	I. Miller & M. Miller: John E. Freund's Mathematical Statistics with applications (Pearson Education International, 2004, 7th edition) M. A. Bean: Probability: The Science of Uncertainty with Applications to Investments, Insurance, and Engineering (Brooks/Cole, Thomas Learning) S. Ghahramani: Fundamentals of Probability, with Stochastic Processes (2005, 3rd edition) M. Hassett & D. Stewart: Probability for Risk Management (2006, 2nd edition)

	S.M. Ross: A First Course in Probability (2005, 7th edition) D. Wackerly, W. Mendenhall III & R. Scheaffer: Mathematical Statistics with Applications (2008, 7th edition)
Course Website	moodle.hku.hk

STAT2902 Financial mathematics (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof K C Yuen, Statistics & Actuarial Science *(kcyuen@hku.hk)*		
Teachers Involved	Prof K C Yuen, Statistics & Actuarial Science		
Course Objectives	This course introduces the fundamental concepts of financial mathematics which plays an important role in the development of basic actuarial techniques. Practical applications of these concepts are also covered.		
Course Contents & Topics	Key topics include: measurement of interest, annuities certain; discounted cash flow analysis; yield rates; amortization schedules and sinking funds; bonds and related securities; practical applications such as 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.		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the fundamental concepts of financial mathematics. 2. Learn standard actuarial notations for a variety of annuities. 3. Do simple discounted cashflow analysis using basic annuities. 4. Learn the operations of some commonly-encountered financial instruments such as bonds, mortgages, short sales, and so on. 5. Quote interest in various modes and determine interest rate based on a series of financial transactions. 6. Deal with Exam FM of the Society of Actuaries.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2901 Probability and statistics: foundations of actuarial science or already enrolled in this course; and Not for students who have passed in STAT3615 Practical mathematics for investment, or already enrolled in this course.		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials	tutorials/example classes	12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and class test(s))	25

Required/recommended reading and online materials	Kellison, S. G.: The Theory of Interest (Irwin: Illinois, 2008, 3rd edition) Broverman, S. A.: Mathematics of Investment and Credit (ACTEX Publications - Mad River Books: Connecticut, 2004, 3rd edition)
Course Website	moodle.hku.hk

STAT3602 Statistical inference (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---

Course Co-ordinator	Prof S M S Lee, Statistics & Actuarial Science *(smslee@hku.hk)*
Teachers Involved	Prof S M S Lee, Statistics & Actuarial Science
Course Objectives	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.
Course Contents & Topics	1. Paradigms of inference: frequentist, Bayesian, Fisherian. 2. Decision theory: loss function; risk; decision rule; admissibility; minimaxity; unbiasedness; Bayes' rule. 3. Estimation theory: exponential families; likelihood; sufficiency; minimal sufficiency; ancillarity; completeness; UMVU estimators; information inequality; large-sample theory of maximum likelihood estimation. 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.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Form a panoramic view of classical developments in mathematical statistics. 2. Gain thorough insight into the essentials of statistical inference. 3. Build a solid foundation for future research studies in statistics and related areas.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models
Offer in 2013 - 2014	Y 1st sem — **Examination** Dec
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	Berry, D. A. & Lindgren, B. W.: Statistics: Theory and Methods (Duxbury, Belmont, 1996) Bickel, P. J. & 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. & Craig, A. T.: Introduction to Mathematical Statistics (Macmillan, New York, 1989) Pace, L. & Salvan, A.: Principles of Statistical Inference: from a neo-Fisherian perspective (World Scientific: Singapore, 1997). Young, G.A. & Smith, R.L.: Essentials of Statistical Inference (Cambridge University Press: Cambridge, 2005).
Course Website	moodle.hku.hk

STAT3612 Data mining (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	48
Course Co-ordinator	Dr G C S Lui, Statistics & Actuarial Science *(csglui@hku.hk)*		
Teachers Involved	Dr G C S Lui, Statistics & Actuarial Science		
Course Objectives	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.
Course Contents & Topics	Data pre-processing, association rules, classification and regression trees, neural networks and cluster analysis.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Implement data mining process summarized in the acronym SEMMA which stands for sampling, exploring, modifying, modeling, and assessing data. 2. Understand and apply a wide range of data mining techniques, and recognize their characteristics, strengths and weaknesses. 3. Be proficient with the leading data mining software---SAS Enterprise Miner. 4. 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. 5. Evaluate the quality of discovered knowledge, taking into account the requirements of the data mining task being solved and the goals of the user.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or (STAT1603 Introductory statistics and any University level 2 course) or STAT3902 Statistical models
Offer in 2013 - 2014	Y 2nd sem **Examination** No Exam
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Test		40
Assignments		30
Project reports		30

Required/recommended reading and online materials	Tan, P. N., Steinback, M. and Kumar, V.: Introduction to Data Mining (Addison Wesley, 2006) T. Hastie, R. Tibshirani, & J. Friedeman: 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)
Course Website	moodle.hku.hk
Additional Course Information	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)

STAT3901 Life contingencies (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr E C K Cheung, Statistics & Actuarial Science *(eckc@hku.hk)*		
Teachers Involved	Dr E C K Cheung, Statistics & Actuarial Science		
Course Objectives	The major objectives of this course are to integrate life contingencies into a full probabilistic framework. The time-until-death random variable is the basic building block by which models for life		

	insurances, designed to reduce the financial impact of the random event of untimely death, are developed. This course introduces the concepts of life contingencies and the basic mathematical skills for modelling life insurance products.
Course Contents & Topics	Key topics include: survival distributions; life table functions; select and ultimate tables; life insurance models; life annuity models; benefit premiums; benefit reserves.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Calculate the expected values, variances, probabilities, and percentiles for survival-time random variables. 2. Define the continuous survival-time random variable that arises from the discrete survival-time random variable using some assumptions for fractional ages. 3. Define present-value-of-benefit random variables defined on survival-time random variables. 4. 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. 5. Calculate benefit premiums for life insurances and annuities. 6. Calculate benefit reserves for life insurances and annuities. 7. Cover part of Exam MLC of the Society of Actuaries.
Pre-requisites (and Co-requisites and Impermissible combination)	(Pass in STAT2601 Probability and statistics II and STAT3615 Practical mathematics for investment) or (Pass in STAT2902 Financial mathematics and (Pass in STAT3902 Statistical models, or already enrolled in this course)) or (Pass in STAT2602 Probability and statistics II and STAT2902 Financial mathematics)
Offer in 2013 - 2014	Y 1st sem **Examination** Dec
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	Bowers. N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. & Nesbitt, C.J.: Actuarial Mathematics (1997, 2nd edition), Itasca, Illinois: The Society of Actuaries Dickson, C.M.D., Hardy, M.R., and Waters, H.R.: Actuarial Mathematics for Life Contingent Risks (Cambridge: Cambridge University Press, 2009)
Course Website	moodle.hku.hk

STAT3902 Statistical models (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr G Tian, Statistics & Actuarial Science *(gltian@hku.hk)*		
Teachers Involved	Dr G Tian, Statistics & Actuarial Science		
Course Objectives	This course is on the basis of 'STAT2901 Probability and Statistics: Foundation of Actuarial Science'. It will further study the concepts and methods of statistics. The course will lay emphasis on the estimation and hypothesis testing, the two major areas of statistical inference. Through the study of this course, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of data.		
Course Contents & Topics	Distribution and density of function of random variables; Order statistics, central limit theorem, Maximum likelihood estimator (MLE), moment estimator, Bayesian estimator, properties of estimators, limiting		

	properties of MLE; Confidence interval estimations for normal mean, the difference of two normal means, normal variance, the ratio of two normal variances, and large-sample confidence intervals; Power function, Neyman-Pearson Lemma, likelihood ratio test, and goodness of fit test.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the importance of sufficient statistic(s) in data reduction and statistical inferences such as point estimation, confidence interval estimation, and testing hypothesis. 2. Derive maximum likelihood estimators of parameters to calculate maximum likelihood estimates. 3. Locate pivotal quantity to construct confidence intervals of parameters. 4. Find testing statistic to test hypotheses associated with one-sample and/or two-sample normal distributions with small sample sizes and non-normal distributions with large sample sizes.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2901 Probability and statistics: foundations of actuarial science; and For BSc(Actuarial Science) students only.
Offer in 2013 - 2014	Y 1st sem **Examination** Dec
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	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) Larsen R. J. and Marx M. L.: An Introduction to Mathematical Statistics and Its Appications (Pearson International Edition, 4th edition)
Course Website	moodle.hku.hk

STAT3903 Stochastic models (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr K S Chong, Statistics & Actuarial Science *(kschong@hku.hk)*		
Teachers Involved	Dr K S Chong, Statistics & Actuarial Science		
Course Objectives	This is an introductory course in probability modelling. A range of important topics in stochastic processes will be discussed.		
Course Contents & Topics	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 maxium variable, geometric Brownian motion, the Black-Scholes option pricing formula, Gaussian bridge, and stationary processes. Birth-and-death process, branching process and renewal process may also be covered (if time permits).		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Apply the conditioning method to calculate the mean and probability. 2. Understand the essentials of Markov chains, the Poisson process, and Brownian motion.		

	3. Understand how stochastic models can be applied to the study of real-life phenomena.
Pre-requisites (and Co-requisites and Impermissible combination)	For BSc(Actuarial Science) students only; and Pass in STAT2901 Probability and statistics: foundations of actuarial science; and Not for students who have passed in MATH3603 Probability theory, or have already enrolled in this course; and Not for students who have passed in STAT3603 Probability modelling, or have already enrolled in this course.
Offer in 2013 - 2014	Y 2nd sem **Examination** May
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	S. M. Ross: Introduction to Probability Models (9th edition)
Course Website	moodle.hku.hk

STAT3904 Corporate finance for actuarial science (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr J K Woo, Statistics & Actuarial Science *(jkwoo@hku.hk)*		
Teachers Involved	Dr J K Woo, Statistics & Actuarial Science		
Course Objectives	This course is designed for actuarial science students to receive 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.		
Course Contents & Topics	The first part of the course will give an introduction to corporate finance and provide an overview of some topics covered in STAT2902 and STAT3615. 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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the factors to be considered by a company when deciding on its capital structure and dividend policy, and also the impact of financial leverage and long/short term financing policies on capital structure. 2. Calculate the value of bonds and stocks. 3. Assess financial performance using various measures. 4. Understand the mean-variance portfolio theory.		
Pre-requisites (and Co-requisites and Impermissible combination)	[(Pass in ACCT1101 Introduction to accounting and STAT2902 Financial mathematics) or (Pass in STAT3610 Risk management and insurance and STAT3615 Practical mathematics for investment)]; and Not for students who have passed in FINA1310 Corporate finance, or have already enrolled in this course.		

Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials: Brealey R. A., Myers S. C. and Allen, F.: Principles of Corporate Finance (2006, 8th edition)
Ross, S. A., Westerfield, R. W. and Jaffe, J.: Corporate Finance (2005, 7th edition)
Luenberger, D. G.: Investment Science (1998)

Course Website: moodle.hku.hk

STAT3905 Introduction to financial derivatives (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr E C K Cheung, Statistics & Actuarial Science *(eckc@hku.hk)*		
Teachers Involved	Dr E C K Cheung, Statistics & Actuarial Science		
Course Objectives	This course aims at providing an understanding of the fundamental concepts of financial derivatives. Emphases are on basic trading and hedging strategies, and the concept of no-arbitrage.		
Course Contents & Topics	Derivatives; short-selling; forward contracts; call options; put options; equity-linked CD; spreads and collars; hedging; financial forwards and futures; commodity swaps; interest rate swaps; put-call parity.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Define and recognize the definitions of terms commonly used in derivatives markets. 2. Evaluate the payoff and profit of basic derivative contracts, including forwards, futures, options, and swaps. 3. Explain how derivative securities can be used as tools to manage financial risk.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2902 Financial mathematics; and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.		
Offer in 2013 - 2014	Y 1st sem	**Examination**	Dec
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning

	outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course		
Course Teaching & Learning Activities	**Activities**	**Details**	**No. of Hours**
	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	**Methods**	**Details**	**Weighting in final course grade (%)**
	Examination		75
	Assignments	Coursework (assignments, tutorials, and a class test)	25
Required/recommended reading and online materials	McDonald, R. L.: Derivatives Markets (Addison Wesley, 2006, 2nd edition), Chapters 1-5, 8.		
Course Website	moodle.hku.hk		

STAT3906 Risk theory I (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr K C Cheung, Statistics & Actuarial Science *(kccg@hku.hk)*		
Teachers Involved	Dr K C Cheung, Statistics & Actuarial Science		
Course Objectives	Risk theory is one of the main topics in actuarial science. Risk theory is the applications of statistical models and stochastic processes to insurance problems such as the premium calculation, ruin probability, etc.		
Course Contents & Topics	Severity models; frequency models; collective risk models;coverage modifications; ruin theory; risk measures; simulation.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the individual risk model and the collective risk model, evaluate the distribution and expectation of the total claim amounts. 2. Estimate the premium of a policyholder and the total claim amounts using the information of the claim amounts made in previous years. 3. Calculate some commonly used risk measures and explain their use and limitation. 4. Apply simulation methods within the context of actuarial models.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3903 Stochastic models, or already enrolled in this course; or Pass in STAT3603 Probability modelling or MATH3603 Probability theory		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors	
A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course		
Course Teaching & Learning Activities	**Activities**	**Details**	**No. of Hours**
	Lectures		36
	Tutorials		12
	Reading / Self study		100

Assessment Methods and Weighting	

Methods	Details	Weighting in final course grade (%)
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	Klugman S. A., Panjer H. H., & Willmot G. E.: Loss Models: From Data to Decisions (John Wiley & Sons, Inc., 2008, 3rd edition)
Course Website	moodle.hku.hk

STAT3907 Linear models and forecasting (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr E A L Li, Statistics & Actuarial Science *(ericli@saas.hku.hk)*		
Teachers Involved	Dr E A L Li, Statistics & Actuarial Science		
Course Objectives	This course deals with applied statistical methods of linear models and investigates various forecasting procedures through using linear models and time series analysis.		
Course Contents & Topics	Regression and multiple linear regression; predicting; generalised linear model; time series models including autoregressive, moving average, autoregressive-moving average and integrated models; forecasting.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Fit a simple or multiple linear regression model to real data. 2. Do ANOVA analysis. 3. Fit a generalized linear model to the real data. 4. Identify and fit a suitable AR, MA or ARMA model to real data. 5. Perform residual analysis. 6. Do forecasting with these fitted models.		
Pre-requisites (and Co-requisites and Impermissible combination)	(Pass in STAT2602 Probability and statistics II; or Pass in STAT3902 Statistical models, or already enrolled in this course); and For BSc(Actuarial Science) students only; and Not for students who have passed in STAT3600 Linear statistical analysis, or have already enrolled in this course; and Not for students who have passed in STAT4601 Time-series analysis, or have already enrolled in this course; and Not for students who have passed in ECON2280 Introductory econometrics, or have already enrolled in this course.		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors		
	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course
Course Teaching & Learning Activities	

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting	

Methods	Details	Weighting in final course grade (%)
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	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)
Course Website	moodle.hku.hk

STAT3908 Credibility theory and loss distributions (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr K C Cheung, Statistics & Actuarial Science *(kccg@hku.hk)*		
Teachers Involved	Dr K C Cheung, Statistics & Actuarial Science		
Course Objectives	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.		
Course Contents & Topics	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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Apply limited fluctuation (classical) credibility including criteria for both full and partial credibility. 2. Perform Bayesian analysis using both discrete and continuous models. 3. Apply Buhlmann and Buhlmann-Straub models and understand the relationship of these to the Bayesian model. 4. Apply conjugate priors in Bayesian analysis and in particular the Poisson-gamma model. 5. Apply empirical Bayesian methods in the nonparametric and semiparametric cases. 6. Construct and select empirical models. 7. Determine the acceptability of a fitted model and/or compare models.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models or STAT3906 Risk theory		
Offer in 2013 - 2014	Y 1st sem	**Examination**	Dec
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	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.
Course Website	moodle.hku.hk

STAT3909 Advanced life contingencies (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr L F K Ng, Statistics & Actuarial Science *(flouisng@hku.hk)*		
Teachers Involved	Dr L F K Ng, Statistics & Actuarial Science		
Course Objectives	The objective of the course is to prepare students for the Non-traditional 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.		
Course Contents & Topics	This course is a continuation of the materials covered in STAT3901. 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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. extend concepts presented for traditional life insurances and annuities to non-interest sensitive insurances. 2. model cash flows for basic Non-traditional life insurances and calculate contract level values. 3. model cash flows of basic Non-traditional life insurance and calculate the present values of the cash flows. 4. calculate benefit policy values for basic Non-traditional life insurances. 5. incorporate expenses in gross premium and calculate policy values based on the gross premium for life insurances and annuities.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3901 Life contingencies, or already enrolled in this course; and For BSc(Actuarial Science) students only.		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organizational and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	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)
Course Website	moodle.hku.hk

STAT3910 Financial economics I (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science *(hlyang@hku.hk)*		
Teachers Involved	Prof H L Yang, Statistics & Actuarial Science Dr J Song, Statistics & Actuarial Science		
Course Objectives	This course is a basic course on the derivative market. The 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 STAT3911 will cover all the concepts, principles and techniques needed for SoA Exam MFE.		

Course Contents & Topics	Option market; European and American options; conditional expectation and discrete-time martingale, discrete-time option-pricing theory; binomial model and its Greeks; true probabilities vs. risk-neutral probabilities; estimating volatility; the Black-Scholes formula; implied volatility; Greeks again; market-making and hedging; exotic options.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Calculate option price using binomial tree. 2. Understand the risk neutral probability. 3. Understand basic probability theory, include probability space, random variable, conditional probability, conditional expectation and discrete time martingale. 4. Understand the Black-Scholes formula and its assumptions, the Greek letters, option elasticity, and implied volatility. 5. Understand the hedging strategies and portfolio, market-maker risk, self-financing portfolio. 6. Understand exotic options.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT2602 Probability and statistics II or STAT3902 Statistical models; and Not for students who have passed in STAT4603 Derivatives and risk management, or have already enrolled in this course; and Not for students who have passed in FINA2322 Derivatives, or have already enrolled in this course.
Offer in 2013 - 2014	Y 1st sem **Examination** Dec
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	**Details**	**No. of Hours**
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 10-14 Lecture notes on conditional expectations and martingale John Hull: Options, Futures and other Derivatives (2008, 7th edition)
Course Website	moodle.hku.hk

STAT3911 Financial economics II (6 credits)

Offering Department	Statistics & Actuarial Science	**Academic Year**	**2013**
		Quota	---
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science *(hlyang@hku.hk)*		
Teachers Involved	Prof H L Yang, Statistics & Actuarial Science		
Course Objectives	This course is an advanced course on the option pricing theory. The course covers Black-Scholes equation and stochastic calculus, and interest models. This course and STAT3910 will cover all the concepts, principles and techniques needed for SoA Exam MFE.		
Course Contents & Topics	Brownian motion; introduction to stochastic calculus; arithmetic and geometric Brownian motion; 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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand Brownian motion and its properties. 2. Understand the Ito calculus and Ito formula.		

	3. Understand the Black-Scholes model and option pricing theory. 4. Understand the delta hedging and some basic risk management methods. 5. Understand some basic interest rate models.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in MATH3603 Probability theory or STAT3903 Stochastic models or STAT3910 Financial economics I
Offer in 2013 - 2014	Y 2nd sem **Examination** May
Offer in 2014 - 2015	Y
Course Grade	A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Examination		75
Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 20, 21 and 24. John Hull: Options, Futures and Other Derivatives (2008, 7th edition) Alison Etheridge: A Course in Financial Calculus (2002) Steven Shreve: Stochastic Calculus for Finance II Continuous-Time Models (2008)
Course Website	moodle.hku.hk

STAT3951 Advanced contingencies (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science *(hlyang@hku.hk)*		
Teachers Involved	Prof H L Yang, Statistics & Actuarial Science		
Course Objectives	This course serves as a continuation of STAT3909 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.]		
Course Contents & Topics	Topic covers further analysis of the multiple state model; unit-linked contracts; 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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Value the cashflow contingent upon more than one risk. 2. Understand how to use multiple decrement tables to evaluate expected cashflows dependent upon more than one decrement. 3. Understand the equity linked insurance products, and the method and idea of valuing the equity linked insurance products. 4. Understand the Esscher transform and its application to option pricing. 5. Value equity-linked death benefits.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.		
Offer in 2013 - 2014	Y 1st sem	**Examination**	Dec
Offer in 2014 - 2015	Y		

Course Grade	A+ to F
Grade Descriptors	**A** Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. **B** Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. **C** Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills. **D** Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. **Fail** Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.
Course Type	Lecture-based course
Course Teaching & Learning Activities	**Activities** / **Details** / **No. of Hours** Lectures / / 36 Tutorials / / 12 Reading / Self study / / 100
Assessment Methods and Weighting	**Methods** / **Details** / **Weighting in final course grade (%)** Examination / / 75 Assignments / Coursework (assignments, tutorials, and a class test) / 25
Required/recommended reading and online materials	Bowers, N. L. et al.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd ed.) Dickson, D. et al.: Actuarial Mathematics for Life Contingent Risks (Cambridge, 2010) CT5 Contingencies Core Technical Core Reading (Institute of Actuaries, 2010) Lecture note on equity linked insurance products.
Course Website	moodle.hku.hk

STAT3953 Fundamentals of actuarial practice (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr L F K Ng, Statistics & Actuarial Science *(flouisng@hku.hk)*		
Teachers Involved	Dr L F K Ng, Statistics & Actuarial Science		
Course Objectives	This course teaches students about the business environment and exposes them to practical real-world situations using the actuarial control cycle as a framework.		
Course Contents & Topics	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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Provide introductory description of financial security systems, common actuarial techniques and practical experiences. 2. Describe actuarial practices, principles, approaches, methods, commonalities, problems and solutions. 3. Explain actuarial practices across the traditional areas of practice. 4. Explain actuarial practices as applied directly on behalf of financial security system providers or as a consultant to those providers. 5. Apply actuarial skills in nontraditional and emerging areas of practice. 6. Provide context for the specific mathematical and technical skills developed in the basic actuarial courses. 7. Prepare for the professional role as an Associate of the Society of Actuaries.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3909 Advanced life contingencies; and For BSc(Actuarial Science) students only.		
Offer in 2013 - 2014	Y 1st sem	**Examination**	No Exam
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		
Grade Descriptors	**A** Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. **B** Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to		

	apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organizational and presentational skills are minimally effective or ineffective.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Project work		12

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Test	in-class quizzes	25
Project reports	written report	50
Presentation	oral presentation	25

Required/recommended reading and online materials: Klugman, S.: Understanding Actuarial Practice (Society of Actuaries, 2012)
Bellis, C., Klugman, S., Shepherd, J., and Lyon, R.: Understanding Actuarial Management: The Actuarial Control Cycle (Institute of Actuaries of Australia, 2010, 2nd ed.)
Brown, R.L. and Gottlieb, L.R.: Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance (ACTEX Publications, Inc., 2007, 3rd ed.)
Segal, S.: Corporate Value of Enterprise Risk Management: The Next Step in Business Management (Wiley, 2011)

Course Website: moodle.hku.hk

STAT3955 Survival analysis (6 credits)

Academic Year: 2013

Offering Department: Statistics & Actuarial Science

Quota: ---

Course Co-ordinator: Dr E K F Lam, Statistics & Actuarial Science *(hrntlkf@hku.hk)*

Teachers Involved: Dr E K F Lam, Statistics & Actuarial Science

Course Objectives: This course is concerned with how models which predict the survival pattern of humans or other entities are established. This exercise is sometimes referred to as survival-model construction.

Course Contents & Topics: 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.

Course Learning Outcomes: On successful completion of the course, students should be able to:

1. Acquire a clear understanding of the nature of failure time data or survival data, a generalization of the concept of death and life.
2. Perform estimation for some commonly used survival models under different types of censoring mechanisms.
3. Analyze survival data using the Cox's semiparametric proportional hazards model.
4. Extend the Cox's model to a multivariate setup to accommodate multivariate survival data.

Pre-requisites (and Co-requisites and Impermissible combination): Pass in STAT3902 Statistical models, or already enrolled in this course; or
Pass in STAT3600 Linear statistical analysis or STAT3901 Life contingencies

Offer in 2013 - 2014: Y 2nd sem — **Examination**: May

Offer in 2014 - 2015: Y

Course Grade: A+ to F

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning

		outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course		
Course Teaching & Learning Activities	**Activities**	**Details**	**No. of Hours**
	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	**Methods**	**Details**	**Weighting in final course grade (%)**
	Examination		75
	Assignments	Coursework (assignments, tutorials, and a class test)	25
Required/recommended reading and online materials	Cox, D. R. and Oakes, D.: Analysis of Survival Data (Chapman and Hall, 1984) Hosmer, D. W. and Lemeshow, S.: Applied Survival Analysis: Regression Modeling of Time to Event 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.)		
Course Website	moodle.hku.hk		

STAT3956 Pension funds and pension mathematics (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr G Ma, Statistics & Actuarial Science *(gma328@hku.hk)*		
Teachers Involved	Dr G Ma, Statistics & Actuarial Science		
Course Objectives	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.		
Course Contents & Topics	The following topics will be covered: Fundamentals of private pension plans; pricing and valuation of pension obligations; actuarial cost methods and their effects on cost patterns; selection of actuarial assumptions; principles of asset and liability management.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Calculate the pension benefits in accordance with the provisions of a pension plan. 2. Calculate the normal cost and actuarial liabilities using different actuarial cost methods. 3. Perform gain and loss analyses for pension valuations. 4. Select appropriate assumptions and methods for funding or accounting purposes. 5. Interpret the valuation results presented in actuarial valuation reports. 6. Develop models for asset and liability projections.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3909 Advanced life contingencies		
Offer in 2013 - 2014	Y 1st sem	**Examination**	Dec
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors		
	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course		
Course Teaching & Learning Activities	**Activities**	**Details**	**No. of Hours**

	Lectures		36
	Tutorials		12
	Reading / Self study		100

Assessment Methods and Weighting	**Methods**	**Details**	**Weighting in final course grade (%)**
	Examination		75
	Assignments	Coursework (assignments, tutorials, and a class test)	25

Required/recommended reading and online materials	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) 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. 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 Actuarial Standard of Practice No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations David Farber, ASA, EA, MSPA, William Farrimond, FSPA, Duane Mayer, MSPA, George Matray, FSPA: Actuarial Cost Methods-A Review, 3rd Edition, 1999, ACTEX Publications 2001 Supplement to Actuarial Cost Methods-A Review, ACTEX Publications
Course Website	moodle.hku.hk

STAT4602 Multivariate data analysis (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	3
Course Co-ordinator	Prof T W K Fung, Statistics & Actuarial Science *(wingfung@hku.hk)*		
Teachers Involved	Prof T W K Fung, Statistics & Actuarial Science		
Course Objectives	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.		
Course Contents & Topics	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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. 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. 2. Compare the mean structure of multiple measurements for one or more than one population(s) by multivariate MANOVA and profile analysis. 3. Investigate the linear associations among one/two group(s) of variables by multiple, partial and canonical correlation and multivariate regression. 4. Explore the latent linear structure of a data set with multiple measurements by principal components analysis and factor analysis. 5. Classify observations of a population with one or more than one measurements by discriminant analysis.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors		
	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
	B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
	C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
	D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
	Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply

	knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		36
Tutorials		12
Reading / Self study		100

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Examination		50
Assignments	Coursework (assignments, tutorials, and a class test)	50

Required/recommended reading and online materials	Johnson, R. A. & Wichern, D. W.: Applied Multivariate Statistical Analysis (Prentice-Hall, 2007, 6th edition) 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.
Course Website	moodle.hku.hk

STAT4607 Credit risk analysis (6 credits)		**Academic Year**	**2013**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr K P Wat, Statistics & Actuarial Science *(watkp@hku.hk)*		
Teachers Involved	Dr K P Wat, Statistics & Actuarial Science		
Course Objectives	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.		
Course Contents & Topics	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.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the Basel requirements for credit risk. 2. Estimate credit scores using the logit model. 3. Understand and estimate default probabilities using various approaches such as Moody's, the KMV and the mortality method. 4. Understand the concept of credit value-at-risk and the CreditMetrics approach. 5. Estimate default correlations. 6. Assess rating systems.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass or already enrolled in STAT3910 Financial economics I or STAT3618 Derivatives and risk management or STAT3905 Introduction to financial derivatives or (FINA2322 Derivatives and any University level 3 course)		
Offer in 2013 - 2014	Y 2nd sem	**Examination**	May
Offer in 2014 - 2015	Y		
Course Grade	A+ to F		

Grade Descriptors

A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.
B	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills.
C	Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D	Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail	Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.

Course Type	Lecture-based course

Course Teaching

Activities	Details	No. of Hours

& Learning Activities	Lectures		36
	Tutorials		12
	Reading / Self study		100
Assessment Methods and Weighting	**Methods**	**Details**	**Weighting in final course grade (%)**
	Examination		60
	Assignments	Coursework (assignments, tutorials, and class test(s))	40
Required/recommended reading and online materials	Resti, A. and Sironi, A. (2007). Risk Management and Shareholders' Value in Banking: From Risk Measurement Models to Capital Allocation Policies. Wiley. Saunders, A. and Allen, L. (2010). Credit Risk Measurement In and Out of the Financial Crisis: New Approaches to Value at Risk and Other Paradigms (3rd Edition). Wiley. Loffler, G. and Posch, P. N. (2010). Credit Risk Modeling using Excel and VBA (2nd Edition). Wiley. Jorion, P. (2011). Financial Risk Manager Handbook (6th Edition). Wiley. Crouhy, M., Galai, D., and Mark, R. (2001). Risk Management. McGraw-Hill. Hull, J. C. (2012). Risk Management and Financial Institutions (3rd Edition). Wiley. Hull, J. C. (2012). Options, Futures, and Other Derivatives (8th Edition). Prentice Hall. Gujarati, D. N. and Porter, D. C. (2009). Basic Econometrics (5th Edition). McGraw-Hill. Bohn, J. R. and Stein, R. M. (2009). Active Credit Portfolio Management in Practice. Wiley. Smithson, C. W. (2003). Credit Portfolio Management. Wiley.		
Course Website	moodle.hku.hk		

SECTION VII Degree Regulations

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

These regulations apply to students admitted under the 4-year '2012 curriculum' to the BSc in Actuarial Science degree curriculum in the academic year 2012-2013 and thereafter.
(See also General Regulations and Regulations for First Degree Curricula)

Definitions

AS1[1] 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.

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 eight semesters of full-time study, extending over not fewer than four academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their studies beyond the maximum period of registration of six academic years.

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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[1] 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 240 credits, in the manner specified in these regulations and the syllabuses, including 144 credits of the required courses as prescribed in the professional core of 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 288 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 432 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.

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 passed courses will earn credits.

(b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.

(c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.

(d) Candidates are required to make up for failed courses in the following manner: repeating the failed course by undergoing instruction and satisfying the assessment, or for elective courses, taking another course in lieu and satisfying the assessment requirements.

(e) There shall be no appeal against the results of examinations and other forms of assessment.

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 240 credits, comprising 144 credits of the required courses as prescribed in the professional core of 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:

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

(b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the Degree of BSc(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.

REGULATIONS FOR FIRST DEGREE CURRICULA[1]

These regulations are applicable to candidates admitted under the 4-year '2012 curriculum' to the first year of first degree curricula in 2012-13 and thereafter.

(See also General Regulations)

UG 1 Definitions:

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

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

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

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

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

'Major programme' means the study requirements, including a capstone experience, for a single major area of disciplinary, interdisciplinary or multidisciplinary study, accumulating not fewer than 72 credits nor more than 96 credits, as prescribed in the syllabuses for a degree curriculum.

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

'Professional core' refers to the study requirements, including a capstone experience, prescribed in the regulations and syllabuses for disciplinary studies in degree curricula which are not structured as major/minor programmes for reasons relating to professional qualification and/or accreditation.

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

[1] These regulations are applicable to candidates admitted under the 4-year '2012 curriculum' (the 2-year curriculum in respect of the BSc(IM), the 5-year curriculum in respect of the BA&BEd(LangEd), BEd&BSc, BEd&BSocSc, BSc(Sp&HearSc), and BNurs, and the 6-year curriculum in respect of the BChinMed, BDS and MBBS) to the first year of first degree curricula in 2012-13 and 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 2011-12 for the Regulations for First Degree Curricula applicable to cohorts admitted in 2010-11 and 2011-12 under the 3-year '2010 curriculum'.)

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

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

'Capstone experience' refers to one or more courses within the major programme or professional core which are approved by the Board of the Faculty for the purpose of integrating knowledge and skills acquired, and which are prescribed in the syllabuses of the degree curriculum.

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

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

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

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

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

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

$$GPA = \frac{\sum_{i} \textit{Course Grade Point} \times \textit{Course Credit Value}}{\sum_{i} \textit{Course Credit Value}}$$

(where 'i' stands for all passed and failed courses taken by the student over a specified period)

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

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

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

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

A 'transcript' refers to a transcript of the record of study of a candidate, issued by the Registry of the University.

UG 2 Advanced standing:

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

(a) at least half the number of credits of the degree curriculum normally required for award of the degree shall be accumulated through study at this University or from transfer of credits for courses completed at other institutions in accordance with Regulation UG 4(d); and

(b) in accordance with Statute III.5 and notwithstanding the granting of advanced and/or transfer credits, a minimum of two semesters of study at this University shall be required before a candidate is considered for the award of a first degree, other than a degree in medicine or surgery, and a minimum of four semesters of study at this University shall be required before a candidate is considered for a first degree in medicine or surgery.

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

UG 3 Period of study:

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

UG 4 Progression in curriculum:

(a) Candidates shall normally be required to take not fewer than 24 credits nor more than 30 credits in any one semester (except the summer semester) unless otherwise permitted or required by the Board of the Faculty, or except in the last semester of study when the number of outstanding credits required to complete the curriculum requirements is fewer than 24 credits.

(b) Candidates may, of their own volition, take additional credits not exceeding 6 credits in each semester, and/or further credits during the summer semester, accumulating up to a maximum of 72 credits in one academic year. With the special permission of the Board of the Faculty, candidates may exceed the annual study load of 72 credits in a given academic year provided that the total number of credits taken does not exceed the maximum curriculum study load for the normative period of study specified in the curriculum regulations, save as provided for under UG4(c).

(c) Where candidates are required to make up for failed credits, the Board of the Faculty may give permission for candidates to exceed the annual study load of 72 credits provided that the total number of credits taken does not exceed the maximum curriculum study load for the maximum period of registration specified in the curriculum regulations.

(d) Candidates may, with the approval of the Board of the Faculty, transfer credits for courses completed at other institutions at any time during their candidature. The number of transferred credits may be recorded in the transcript of the candidate, but the

results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the degree curricula of the candidates during their candidature at the University.

(e) Unless otherwise permitted by the Board of the Faculty, candidates shall be recommended for discontinuation of their studies if they have:

(i) failed to complete successfully 36 or more credits in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or

(ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or

(iii) exceeded the maximum period of registration specified in the regulations of the degree.

UG 5 Requirements for graduation:

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

(a) successful completion of 12 credits in English language enhancement, including 6 credits in Core University English[2] and 6 credits in an English in the Discipline course[3];

(b) successful completion of 6 credits in Chinese language enhancement[4];

(c) successful completion of 36 credits of courses in the Common Core Curriculum, selecting not more than one course from the same Area of Inquiry within one academic year and at least one and not more than two courses from each Area of Inquiry[5] during the whole period of study; and

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

UG 6 Exemption:

Candidates may be exempted, with or without special conditions attached, from any of the requirements in UG 5 by the Senate in exceptional circumstances. Candidates who are so

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[2] Candidates who have achieved Level 5** in English Language in the Hong Kong Diploma of Secondary Education Examination, or equivalent, may at the discretion of the Faculty be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

[3] (a) To satisfy the English in the Discipline (ED) requirement, candidates who have passed the ED course for a Major but subsequently change that Major are required to pass the ED course for the new Major, or either of the double Majors finally declared upon graduation irrespective of whether the second Major is offered within or outside of the candidates' home Faculty.

(b) Candidates declaring double Majors can, if they fail in the ED course for one of the Majors, either (i) re-take and successfully complete that failed ED course, or (ii) successfully complete the ED course for the other Major, irrespective of whether the Major is offered within or outside of the candidates' home Faculty.

(c) Candidates who undertake studies in double Majors or double degrees are not required to take a second ED course but may be advised by the Faculty to do so.

[4] Candidates who have not studied Chinese language during their secondary education may be exempted from this requirement and should take an elective course in lieu, see *Regulation UG6*.

[5] Candidates registered for double degree studies are required to successfully complete 24 credits of courses in the Common Core Curriculum, selecting one course from each Area of Inquiry, within the curriculum of the first degree, as appropriate.

exempted must replace the number of exempted credits with courses of the same credit value.

UG 7 Assessment:

(a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only passed courses will earn credits.

(b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.

(c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.

(d) Candidates are required to make up for failed courses in the following manner as prescribed in the curriculum regulations:

(i) undergoing re-assessment/re-examination in the failed course to be held no later than the end of the following semester (not including the summer semester); or

(ii) re-submitting failed coursework, without having to repeat the same course of instruction; or

(iii) repeating the failed course by undergoing instruction and satisfying the assessments; or

(iv) for elective courses, taking another course *in lieu* and satisfying the assessment requirements.

(e) There shall be no appeal against the results of examinations and all other forms of assessment.

UG 8 Grading system:

(a) The grades, their standards and the grade points for assessment shall be as follows[6]:

Grade	*Standard*	*Grade Point*
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.

[6] UG 8 is not applicable to the BDS and MBBS curricula.

UG 9 Honours classifications:

(a) Honours classifications shall be awarded in five divisions[7]: 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:

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

(b) Honours classification may not be determined solely on the basis of a candidate's Cumulative GPA and the Board of Examiners for the degree 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.

[7] UG 9 is not applicable to the BChinMed, BDS and MBBS.

SECTION VIII Teaching Weeks

Teaching Weeks 2013-2014 for Undergraduate and Taught Postgraduate Students

	SUN	MON	TUE	WED	THUR	FRI	SAT	Week No.	**FIRST SEMESTER: SEP 2 - DEC 23, 2013**
	1	2	3	4	5	6	7	1	First Day of Teaching: Sep 2, 2013
	8	9	10	11	12	13	14	2	
SEP-13	15	16	17	18	19	*[20]*	21	3	
	22	23	24	25	26	27	28	4	
	29	30							
			[1]	2	3	4	5	5	
	6	7	8	9	10	11	12	6	
OCT-13	13	*[14]*	15	16	17	18	19	7 (Reading)	Reading/Field Trip Week: Oct 14-19, 2013
	20	21	22	23	24	25	26	8	
	27	28	29	30	31			9	
						1	2		
	3	4	5	6	7	8	9	10	
NOV-13	10	11	12	13	14	15	16	11	
	17	18	19	20	21	22	23	12	
	24	25	26	27	28	29	30	13	Last Day of Teaching: Nov 30, 2013
	1	2	3	4	5	6	7	14 (Revision)	Revision Period: Dec 2 - 6, 2013
	8	9	10	11	12	13	14	15	Assessment Period: Dec 7 - 23, 2013
DEC-13	15	16	17	18	19	20	21	16	
	22	23	(24)	*[25]*	*[26]*	27	28	17	
	29	30	<31>					18 (Break)	
				[1]	2	3	4		
	5	6	7	8	9	10	11	19 (Break)	
JAN-14	12	13	14	15	16	17	18	20 (Break)	**SECOND SEMESTER: JAN 20 - MAY 31, 2014**
	19	20	21	22	23	24	25	21	First Day of Teaching: Jan 20, 2014
	26	27	28	29	<30>	*[31]*		22	Class Suspension Period for the Lunar New Year:
							[1]		Jan 31 - Feb 6, 2014
	2	*[3]*	4	5	6	7	8	23 (Suspension)	
FEB-14	9	10	11	12	13	14	15	24	
	16	17	18	19	20	21	22	25	
	23	24	25	26	27	28		26	
							1		
	2	3	4	5	6	7	8	27	
MAR-14	9	10	11	12	13	14	15	28 (Reading)	Reading/Field Trip Week: Mar 10 - 15, 2014
	16	17	18	19	20	21	22	29	
	23	24	25	26	27	28	29	30	
	30	31							
			1	2	3	4	*[5]*	31	
	6	7	8	9	10	11	12	32	
APR-14	13	14	15	16	17	*[18]*	*[19]*	33	
	20	*[21]*	22	23	24	25	26	34	
	27	28	29	30				35	
					[1]	2	3		Last Day of Teaching: May 3, 2014
	4	5	*[6]*	7	8	9	10	36 (Revision)	Revision Period: May 5 - 10, 2014
MAY-14	11	12	13	14	15	16	17	37	Assessment Period: May 12 - 31, 2014
	18	19	20	21	22	23	24	38	
	25	26	27	28	29	30	31	39	
	1	*[2]*	3	4	5	6	7	40 (Break)	
	8	9	10	11	12	13	14	41 (Break)	
JUN-14	15	16	17	18	19	20	21	42 (Break)	
	22	23	24	25	26	27	28	43 (Break)	**OPTIONAL SUMMER SEMESTER**
	29	30							JUN 30 - AUG 23, 2014
			[1]	2	3	4	5	44	
	6	7	8	9	10	11	12	45	
JUL-14	13	14	15	16	17	18	19	46	
	20	21	22	23	24	25	26	47	
	27	28	29	30	31			48	
						1	2		
	3	4	5	6	7	8	9	49	
AUG-14	10	11	12	13	14	15	16	50	
	17	18	19	20	21	22	23	51	
	24	25	26	27	28	29	30	52 (Break)	
	31							53 (Break)	

[ ] 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

Notes:

First Semester: 12 Mondays, 11 Tuesdays, 12 Wednesdays and Thursdays, 11 Fridays, and 12 Saturdays

Second Semester: 12 Mondays, 13 Tuesdays and Wednesdays, 11 Thursdays, 12 Fridays, and 11 Saturdays

Useful contacts and websites

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 & 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
	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