4

BSc in Actuarial Science

Syllabuses and Regulations
(4-year curriculum)

2014-15

Faculty of Science
The University of Hong Kong

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 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	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	---	Dr M Legg (1st sem); Dr N Fong (2nd sem), English		
CAES9820	Academic English for science students	6	NIL	Y	Y	1, 2	Dec, May	---	Mr S Boynton, English		
School of Chinese											
CSCI9001	Practical Chinese for science students	6	NIL	Y	Y	1, 2	Dec, May	---	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. For BSc(ActuarSc) students only.	Y	Y	1	Dec	---	Dr C W Wong, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
MATH2822	Mathematical methods for actuarial science II	6	Pass in MATH1821 Mathematical methods for actuarial science I For BSc(ActuarSc) students only.	Y	Y	2	May	---	Dr J T Chan, Mathematics	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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	---	Dr Y K Chung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 2015-2016 is subject to change.

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
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 & 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 2014 BSc in Actuarial Science 2014 Major in Statistics 2014 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	10	Dr G C S Lui, Statistics & 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 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 Major in Statistics 2014 Minor in Risk Management 2014 Minor in Statistics
STAT3616	Advanced SAS programming	6	STAT2601 Probability and statistics I or STAT2901 Probability and statistics: foundations of actuarial science (Students are strongly recommended to take STAT2603 Data management with SAS prior to taking this course.)	Y	Y	2	May	10	Prof K W Ng, Statistics & 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 2014 BSc in Actuarial Science 2014 Major in Statistics 2014 Minor in Statistics
STAT3901	Life contingencies	6	(Pass in STAT2602 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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	
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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 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	---	Prof Y Lam, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 I	Y	Y	1	Dec	---	Dr K C Cheung, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies
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	---	Prof H L Yang, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Minor in Actuarial Studies 2013 Minor in Actuarial Studies 2014 Minor in Actuarial Studies

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
STAT3911	Financial economics II	6	Pass in MATH3603 Probability theory or STAT3603 Probability modelling or STAT3903 Stochastic models or STAT3910 Financial economics I	Y	Y	2	May	---	Prof H L Yang, Statistics & Actuarial Science	2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science	2012 Major in Risk Management 2012 Minor in Actuarial Studies 2013 Major in Risk Management 2013 Minor in Actuarial Studies 2014 Major in Risk Management 2014 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	---	Dr E C K Cheung, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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	N	---	---	---	TBC, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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	N	---	---	---	Prof W K Li, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 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 & 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 2014 BSc in Actuarial Science 2014 Major in Statistics 2014 Minor in Statistics
STAT3956	Pension funds and pension mathematics	6	Pass in STAT3909 Advanced life contingencies	Y	Y	1	Dec	---	Prof G Ma, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
STAT4602	Multivariate data analysis	6	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	2	May	6	Prof T W K Fung, Statistics & Actuarial Science	2012 Major in Statistics 2013 Major in Statistics 2014 Major in Statistics	2012 BSc in Actuarial Science 2012 Minor in Statistics 2013 BSc in Actuarial Science 2013 Minor in Statistics 2014 BSc in Actuarial Science 2014 Minor in Statistics
STAT4606	Risk management and Basel Accords in banking and finance	6	Pass in STAT3910 Financial economics I or STAT3905 Introduction to financial derivatives or STAT3618 Derivatives and risk management or (FINA2322 Derivatives and any University level 3 course).	Y	Y	2	May	---	Mr P K Y Pang, Statistics & Actuarial Science		2012 Major in Risk Management 2012 Minor in Risk Management 2013 Major in Risk Management 2013 Minor in Risk Management 2014 Major in Risk Management 2014 Minor in Risk Management
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 & 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 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 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)]	Y	Y	2	May	---	Dr Z Zhang, Statistics & 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 2014 BSc in Actuarial Science 2014 Major in Risk Management 2014 Minor in Risk Management
STAT4711	Capstone experience for actuarial science undergraduates	6	Pass in at least 24 credits of advanced level statistics courses (STAT3XXX, STAT4XXX or STAT6XXX) including (STAT3901 Life contingencies, or already enrolled in this course; or Pass in STAT3909 Advanced life contingencies, or already enrolled in this course); and This capstone course is for BSc(Actuarial Science) students only.	N	Y	---	---	---	Prof W K Li, Statistics & Actuarial Science		

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2014-2015	Exam held in 2014-2015	Quota	Course Coordinator	Major / Minor (The Major/Minor that this course appears as a required course)	
				2014-2015	2015-2016	0=year long 1=1st sem 2=2nd sem S=summer			TBC = To be confirmed	Compulsory Course (Must Take)	Core Course (With Choices)
Department of Statistics & Actuarial Science (Cont'd)											
STAT4767	Actuarial science internship	6	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including STAT3901 Life contingencies; and This capstone course is for BSc(Actuarial Science) students only.	Y	Y	2	No exam	---	Dr L F K Ng, Statistics & Actuarial Science		
STAT4798	Statistics and actuarial science project	6	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including 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 This capstone course is for BSc(Actuarial Science) students only.	N	Y	---	---	---	Prof S M S Lee, Statistics & Actuarial Science		
STAT4901	Risk theory II	6	Pass in STAT3906 Risk theory I	Y	Y	2	May	---	Dr J K Woo, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
STAT4902	Selected topics in actuarial science	6	Pass in STAT3906 Risk theory I	N	N	---	---	---	TBC, Statistics & Actuarial Science		2012 BSc in Actuarial Science 2013 BSc in Actuarial Science 2014 BSc in Actuarial Science
STAT6110	Advanced probability	6	Pass in STAT3603 Probability modelling or STAT3903 Stochastic models	Y	Y	1	Dec	---	Prof Y Lam, Statistics & Actuarial Science		
STAT6111	Computational statistics	6	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	1	Dec	---	Dr G Tian, Statistics & Actuarial Science		
STAT6115	Advanced quantitative risk management and finance	6	Pass in STAT4608 Market risk analysis	N	Y	---	---	---	Prof W K Li, Statistics & Actuarial Science		
STAT7109	Research methods in statistics	6	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting	Y	Y	1	Dec	---	Dr J F Yao, Statistics & 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 2014/15

Programme Title	BSc in Actuarial Science
Offered to students admitted to Year 1 in	**2014**

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 financial 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 from List A and List B, with at least 18 credits from List A:

List A

STAT3951	Advanced contingencies (6)
STAT3954	Current topics in actuarial science (6)
STAT3955	Survival analysis (6)
STAT3956	Pension funds and pension mathematics (6)
STAT4607	Credit risk analysis (6)
STAT4608	Market risk analysis (6)
STAT4901	Risk theory II (6)
STAT4903	Actuarial techniques for general insurance (6)

List B

STAT3602	Statistical inference (6)
STAT3612	Data mining (6)
STAT3616	Advanced SAS programming (6)
STAT3952	Investment and asset management (6)
STAT3953	Fundamentals of actuarial practice (6)
STAT4602	Multivariate data analysis (6)
STAT4902	Selected topics in actuarial science (6)

5. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT4711	Capstone experience for actuarial science undergraduates (6)

STAT4767	Actuarial science internship (6)
STAT4798	Statistics and actuarial science project (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	**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 financial 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 from List A and List B, with at least 18 credits from List A:

List A

STAT3951	Advanced contingencies (6)
STAT3954	Current topics in actuarial science (6)
STAT3955	Survival analysis (6)
STAT3956	Pension funds and pension mathematics (6)
STAT4607	Credit risk analysis (6)
STAT4608	Market risk analysis (6)
STAT4901	Risk theory II (6)
STAT4903	Actuarial techniques for general insurance (6)

List B

STAT3602	Statistical inference (6)
STAT3612	Data mining (6)
STAT3616	Advanced SAS programming (6)
STAT3952	Investment and asset management (6)
STAT3953	Fundamentals of actuarial practice (6)
STAT4602	Multivariate data analysis (6)
STAT4902	Selected topics in actuarial science (6)

5. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT4711	Capstone experience for actuarial science undergraduates (6)

STAT4767	Actuarial science internship (6)
STAT4798	Statistics and actuarial science project (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:

(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 financial 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

List A

At least 24 credits from List A and List B, with at least 18 credits from List A:

STAT3951	Advanced contingencies (6)
STAT3954	Current topics in actuarial science (6)
STAT3955	Survival analysis (6)
STAT3956	Pension funds and pension mathematics (6)
STAT4607	Credit risk analysis (6)
STAT4608	Market risk analysis (6)
STAT4901	Risk theory II (6)
STAT4903	Actuarial techniques for general insurance (6)

List B

STAT3602	Statistical inference (6)
STAT3612	Data mining (6)
STAT3616	Advanced SAS programming (6)
STAT3952	Investment and asset management (6)
STAT3953	Fundamentals of actuarial practice (6)
STAT4602	Multivariate data analysis (6)
STAT4902	Selected topics in actuarial science (6)

5. Capstone requirement (6 credits)

At least 6 credits selected from the following courses:

STAT4711	Capstone experience for actuarial science undergraduates (6)

STAT4767	Actuarial science internship (6)
STAT4798	Statistics and actuarial science project (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.

SECTION VI Course Descriptions

CAES1000 Core University English (6 credits)		**Academic Year**	**2015**
Offering Department	English	**Quota**	---
Course Co-ordinator	Dr M Legg (1st sem); Dr N Fong (2nd sem)*, English (mglegg@hku.hk; fongsn@hku.hk)*		
Teachers Involved	Dr M Legg (1st sem); Dr N Fong (2nd sem), 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 this course, students should be able to:		

CLO 1	identify and distinguish between main ideas and supporting details in lectures and written texts and demonstrate an understanding of the arguments / facts expressed
CLO 2	form and express personal opinions through critical reading and listening
CLO 3	argue for and defend a position in a clear and structured way using academic sources, through writing and speaking
CLO 4	demonstrate control of grammatical accuracy and lexical appropriacy in academic communication

Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2015 - 2016	Y 1st sem 2nd sem	**Examination**	Dec May
Offer in 2016 - 2017	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 (%)**	**Assessment Methods to CLO Mapping**
Assignments		65	
Examination		35	

CAES9820 Academic English for science students (6 credits)		**Academic Year**	**2014**
Offering Department	English	**Quota**	---
Course Co-ordinator	Mr S Boynton, English *(sboynton@hku.hk)*		
Teachers Involved	Mr S Boynton, 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 spontaneously 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; and - 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 2014 - 2015	Y 1st sem 2nd sem	**Examination**	Dec May
Offer in 2015 - 2016	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	seminars	36
Reading / Self study		120
Assessment	independent learning work	84

Assessment Methods and Weighting

Methods	**Details**	**Weighting in final course grade (%)**
Test		30
Assignments	independent learning work	25
Essay	other genres of writing	45

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.

CSCI9001 Practical Chinese for science students (6 credits)		Academic Year	2014
Offering Department	Chinese	**Quota**	---
Course Co-ordinator	Mr K W Wong, Chinese *(kwwongb@hkusua.hku.hk)*		
Teachers Involved	Dr C M Chan, Chinese Dr K T Lam, Chinese Dr S F Lee, Chinese Mr K W Wong, Chinese		
Course Objectives	This course aims to enhance the students' competence using Chinese for professional communication. It helps the students to master the techniques of writing different types of documents such as memos, emails, letters, announcements, notice, brochures, leaflets, and reports. In addition, topics addressing resentation and discussion techniques, the style and rhetoric of reader-based writings are included to heighten the students' linguistic sensitivity.		
Course Contents & Topics	- Grammar & vocabulary of modern Chinese - The Chinese writing system - Techniques of writing short messages: good-news and goodwill messages, bad-news messages, and persuasive messages - Techniques of writing electronic documents: emails; presentations - Styles and rhetoric of reader-based reports, proposals and presentations		
Course Learning Outcomes	On successful completion of the course, students should be able to: - Develop a balanced competency in modern Chinese and write well-formed sentences; - Employ rhetorical devices and stylistics, as well as practical writing skills specific to their discipline; - Explore new tactics of communication, initiate discussions and debates and address new challenges; - Apply their disciplinary knowledge and their Chinese writing skills and professional presentation techniques analytically, critically and creatively in different social or professional discourses.		
Pre-requisites (and Co-requisites and Impermissible combination)	NIL		
Offer in 2014 - 2015	Y 1st sem 2nd sem	**Examination**	Dec May
Offer in 2015 - 2016	Y		
Course Grade	A+ to F		

Grade Descriptors

A	The student acquired a superb ability to achieve the intended learning outcomes of the course at all levels of learning: describe, apply, evaluate, and synthesize the language techniques for effective communication in all situations.
B	The student acquired the ability to achieve the intended learning outcomes of the course at all levels of learning: describe, apply, evaluate, and synthesize the language techniques for effective communication in most situations.
C	The student acquired adequate ability to achieve the intended learning outcomes of the course at low levels of learning (i.e. describe and apply the language techniques for effective communication) but not at high levels of learning (i.e. evaluate and synthesize the language techniques for effective communication).
D	The student only has basic familiarity with the subject.
Fail	The student has very limited familiarity with the subject.

Course Type: Lecture-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Lectures		12
Tutorials		12
Group work		24
Reading / Self study	Online learning (24%), homework (12%) and assessment (including preparation) (12%)	72

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Examination		50
Assignments	Written project and web-based quiz (40%) and Tutorial disscussion (10%)	50

Required/recommended reading and online materials

汪麗炎，1998年。《漢語修辭》。上海：上海大學出版社。李家樹、謝耀基，1994年。《漢語的特性和運用》。香港：香港大學出版社。香港城市大學語文學部，2001年。《中文傳意：基礎篇》。香港：香港城市大學出版社。周錫韋复，1996年。《中文應用寫作教程》。香港：三聯書店。李錦昌，2000年。《現代商業傳意大全》。香港：商務印書館。汪麗炎，1998年。《漢語寫作》。上海：上海大學出版社。香港城市大學語文學部，2001年。《中文傳意：寫作篇》。香港：香港城市大學出版社。經文略、蘭德主編，2001年。《企業文案撰寫模式大全》。廣州：廣東經濟出版社。劉美森，2001年。《新編公文寫作學》。成都：四川人民出版社。黎運漢、李軍，2001年。《商業語言》。台北：台灣商務印書館。

MATH1821 Mathematical methods for actuarial science I (6 credits)		**Academic Year**	**2014**
Offering Department	Mathematics	**Quota**	---
Course Co-ordinator	Dr C W Wong, Mathematics *(cwwongab@hku.hk)*		
Teachers Involved	Dr C W Wong, 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 - 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; 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. For BSc(ActuarSc) students only.		
Offer in 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**	**Assessment Methods to CLO Mapping**
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**	**2014**
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. For BSc(ActuarSc) students only.		
Offer in 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**	**Assessment Methods to CLO Mapping**
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)
Course Website	http://hkumath.hku.hk/course/MATH2822/

STAT2901 Probability and statistics: foundations of actuarial science (6 credits)		**Academic Year**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 2-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and class test(s))	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 1st sem **Examination** Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 2-hour written examination	75

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**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	10
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 2014 - 2015	Y 2nd sem **Examination** No Exam
Offer in 2015 - 2016	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 (%)**
Assignments		30
Project reports		30
Test		40

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)

STAT3616 Advanced SAS programming (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	10
Course Co-ordinator	Prof K W Ng, Statistics & Actuarial Science *(kaing@hku.hk)*		
Teachers Involved	Prof K W Ng, Statistics & Actuarial Science		
Course Objectives	This course aims to equip students, who have taken STAT2603, with a high level of proficiency in SAS programming for automation of procedures and data processing in solving complex problems more efficiently.		
Course Contents & Topics	Overview of SAS underlying parts. Macro programming. Advanced programming techniques including		

	data simulation, advanced data look-up techniques, modifying transaction datasets and controlling I/O processing and memory.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the system of SAS and basic programming. 2. Use the BY statement for parallel processing to aid automation. 3. Use the output dataset without printing to OUTPUT windows for piping idea in automation. 4. Use SAS MACRO to develop customized and automated applications. 5. Use advanced SAS programming statements and techniques to solve complex problems.
Pre-requisites (and Co-requisites and Impermissible combination)	STAT2601 Probability and statistics I or STAT2901 Probability and statistics: foundations of actuarial science (Students are strongly recommended to take STAT2603 Data management with SAS prior to taking this course.)
Offer in 2014 - 2015	Y 2nd sem **Examination** May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	50
Examination	One 2-hour written examination	50

Required/recommended reading and online materials	SAS Certification Prep Guide: Advanced Programming for SAS 9, Third Edition. Carpenter, A.: Carpenters Complete Guide to the SAS Macro Language. Second Edition. (North Carolina: SAS Institute Inc., 2004)
Course Website	moodle.hku.hk

STAT3901 Life contingencies (6 credits)		**Academic Year**	**2014**
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 STAT2602 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 2014 - 2015	Y 1st sem **Examination** Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments,	25

		tutorials, and a class test)	
	Examination	One 2-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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., 2012, 4th edition)
Course Website	moodle.hku.hk

STAT3907 Linear models and forecasting (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof Y Lam, Statistics & Actuarial Science *(ylam@saas.hku.hk)*		

Teachers Involved	Prof Y Lam, 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 2014 - 2015	Y 2nd sem **Examination** May
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 I
Offer in 2014 - 2015	Y 1st sem **Examination** Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

Required/recommended reading and online materials	Klugman S. A., Panjer H. H., & Willmot G. E.: Loss Models: From Data to Decisions (John Wiley & Sons, 2010, 4th edition).
Course Website	moodle.hku.hk

STAT3909 Advanced life contingencies (6 credits)		**Academic Year**	**2014**
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	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 2014 - 2015	Y 2nd sem **Examination** May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)** Assignments / Coursework (assignments, tutorials, and a class test) / 25 Examination / One 3-hour written examination / 75
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)		**Academic Year**	**2014**
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 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 STAT3603 Probability modelling or STAT3903 Stochastic models or STAT3910 Financial economics I		
Offer in 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
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 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 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**
	Assignments	Coursework (assignments, tutorials, and a class test)	25
	Examination	One 3-hour written examination	75

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

STAT3952 Investment and asset management (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	TBC, Statistics & Actuarial Science *()*		
Teachers Involved	TBC, Statistics & Actuarial Science		
Course Objectives	The main objective of this course is to introduce students to some of the methods and procedures commonly used in the management of an investment portfolio. Emphasis will be placed on methods to tackle problems faced by insurance industry such as investment strategy formulation and interest rate risk management.		
Course Contents & Topics	This course provides an overview on the problems faced by actuaries when applying fundamental actuarial concepts to investment practice. This course will cover the following topics: Investment Management Process, Asset Allocation, Managing Fixed Income Portfolios and Performance Measurement.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Explain how an investment policy and an investment strategy can help manage risk. 2. Identify the obligations of a fiduciary in managing investment portfolios. 3. Describe how to select an investment strategy for an individual. 4. Describe the particular issues influencing investment strategies for institutional investors. 5. Explain principles of risk-based capital management. 6. Describe asset allocation strategies that can be used to construct an asset portfolio. 7. Identify and describe financial and non-financial risks faced by an entity. 8. Define risk metrics to quantify major types of risk exposure. 9. Apply ALM principles to the establishment of investment policy and strategy. 10. Select or build a benchmark for a given portfolio or portfolio management style. 11. Describe and assess performance measurement methodologies for investment portfolios.		
Pre-requisites (and Co-requisites and Impermissible combination)	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.		
Offer in 2014 - 2015	N	**Examination**	---
Offer in 2015 - 2016	N		
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	**Methods**	**Details**	**Weighting in final**

and Weighting			**course grade (%)**
	Assignments	Assignments, tutorials/example classes, group discussions, project and presentation	50
	Examination	One 2-hour written examination	50
Required/recommended reading and online materials	D. Babbel & F. J. Fabozzi: Investment Management for Insurers (Frank J. Fabozzi & Assoc., 1999) Z. Bodie, A. Kane, & A. Marcus: Investments (McGraw-Hill, 2005, 7th edition) Crouhy, Galai, & Mark: Risk Management (2001) F. J. Fabozzi: Handbook of Fixed Income Securities (McGraw-Hill, 2005, 7th edition) Litterman: Modern Investment Management: An Equilibrium Approach (2003)		
Course Website	moodle.hku.hk		
Additional Course Information	Other references: J. L. Maginn, D.L. Tuttle, J.E. Pinto & D.W. McLeavey: Managing Investment Portfolios, A Dynamic Process (Wiley, 2007, 3rd edition) Tilman: Asset / Liability Management of Financial Institutions (2003)		

STAT3953 Fundamentals of actuarial practice (6 credits)		**Academic Year**	**2014**
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 2014 - 2015	Y 1st sem	**Examination**	No Exam
Offer in 2015 - 2016	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
	Reading / Self study		100
Assessment Methods and Weighting	**Methods**	**Details**	**Weighting in final course grade (%)**

	Presentation	oral presentation	25
	Project reports	written report	50
	Test	in-class quizzes	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		

STAT3954 Current topics in actuarial science (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof W K Li, Statistics & Actuarial Science *(hrntlwk@hku.hk)*		
Teachers Involved	Mr Simon Lam, Mr Fred Choi & Mr Henry Cheung, Statistics & Actuarial Science Mr Henry Wong, Statistics & Actuarial Science		
Course Objectives	This course aims at providing practical elements for actuarial students including daily life actuarial practice and the basic capability to understand, research in and handle the laws as and when situations would arise, which will benefit students in their coming future career.		
Course Contents & Topics	This course covers a full range of topics related to both areas including 1) Practical Actuarial Practice and 2) Actuaries' Legal Thinking. For Practical Actuarial Practice: It covers the major practical topics in both Life and Casualty areas. For Life Insurance, it covers the full picture of actuarial control cycle including Product Pricing, Valuation, Financial Reporting and Experience Analysis. For General Insurance, it covers the backbone areas including Product Pricing and Valuation. For Actuaries' Legal Thinking: This is the 7th year of the course and the full start of a new course structure echoing changes in the market for basic legal and general insurance skills for actuaries. Intellectually stimulating recent legal materials with heavy involvement of actuarial and other general insurance expertise would dominate the course, alongside with basic legal research skills and fundamental legal thinking. Sharing of experience from guests from the General Insurance Industry would also infiltrate the course.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Have a basic understanding regarding Actuarial Control Cycle from A to Z for Life Insurance and General Insurance. 2. Possess some experience regarding fundamental actuarial practice through practical project. 3. Possess basic understanding of the legal system in Hong Kong. 4. Possess fundamental knowledge in certain core legal aspects such as the law of contract and the law of tort. 5. Possess fundamental knowledge of the law of insurance. 6. Conduct elementary legal researches when facing with legal problems. 7. Understand the basic elements of a routine judgment, the matrix of the facts and the law involved.		
Pre-requisites (and Co-requisites and Impermissible combination)	(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.		
Offer in 2014 - 2015	N	**Examination**	---
Offer in 2015 - 2016	N		
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 (%)
	Assignments	Coursework (assignments, practical project & class test(s))	100

Course Website	moodle.hku.hk

STAT3955 Survival analysis (6 credits)		**Academic Year**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)
	Assignments	Coursework (assignments, tutorials, and a class test)	25
	Examination	One 3-hour written examination	75

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**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof G Ma, Statistics & Actuarial Science *(gma328@hku.hk)*		
Teachers Involved	Prof 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. Understand the principles of asset and liability modeling as related to pension plans.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3909 Advanced life contingencies		
Offer in 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

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**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	6
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	50
Examination	One 3-hour written examination	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

STAT4606 Risk management and Basel Accords in banking and finance (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Mr P K Y Pang, Statistics & Actuarial Science *(the_pang@yahoo.com)*		
Teachers Involved	Mr P K Y Pang, Statistics & Actuarial Science		
Course Objectives	To provide comprehensive knowledge and in-depth understanding of risk management in the banking and finance industry to students. The focus is on management with basic measurement fundamentals only forming a part of the course. Accordingly, minimal background in quantitative methods will be required and involved. However, basic financial product (eg: bonds, swaps, options) knowledge will be required.		
Course Contents & Topics	The course introduces and explains: - the importance of risk management, - risk nature and types, - design and establishment of a risk management framework, - the importance of people and corporate culture, - the complete risk management cycle, - measurement and management of credit, market and operational risks, - Basel accords and the capital treatments for credit, market and operational risks, - key developments (eg: Know-Your-Customers, Anti-Money laundering, Sarbanes-Oxley) and critical issues, - the importance of business continuity, - design and implementation of a business continuity plan.		
Course Learning Outcomes	On successful completion of the course, students should be able to (in the context of banking and finance industry): 1. Understand the importance, nature and classification of various risks, and the risk management principle and cycle. 2. Design and establish a risk management framework. 3. Demonstrate knowledge and understanding of the measurements of credit, market and operational risks. 4. Explain and describe Basel accords and its capital treatments for credit, market and operational risks. 5. Appreciate the importance of, design and implement a business continuity plan.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3910 Financial economics I or STAT3905 Introduction to financial derivatives or STAT3618 Derivatives and risk management or (FINA2322 Derivatives and any University level 3 course).		
Offer in 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	40
Examination	One 2-hour written examination	60

Required/recommended reading and online materials

Crouhy, M., Galai, D. and Mark, R.: The Essentials of Risk Management (McGraw-Hill, 2006)
Jorion, P.: Financial Risk Manager Handbook + Test Bank: FRM part I/Part II (Wiley, 2010, 6th edition)
Hull, J. C.: Risk Management and Financial Institutions (Pearson Higher Education, 2010, 2nd edition)
Gallati, R.: Risk Management and Capital Adequacy (McGrawHill, 2003)

Course Website: moodle.hku.hk

Additional Course Information: This course is previously called STAT2320 as the prerequisite changed to STAT3303.

STAT4607 Credit risk analysis (6 credits)		**Academic Year**	**2014**
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 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and class test(s))	40
Examination	One 2-hour written examination	60

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

STAT4608 Market risk analysis (6 credits)	**Academic Year**	**2014**

Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr Z Zhang, Statistics & Actuarial Science *(zhangz08@hku.hk)*		
Teachers Involved	Dr Z Zhang, Statistics & Actuarial Science		
Course Objectives	Financial risk management has experienced a revolution in the last decade thanks to the introduction of new methods for measuring risk, particularly Value-at-Risk (VaR). This course introduces modern risk management techniques covering the measurement of market risk using VaR models and financial time series models, and stress testing.		
Course Contents & Topics	Risk Measures; Value-at-Risk (VaR) models (parametric, Monte Carlo simulation and Historical simulation); Risk factor mapping; Advanced VaR models (GARCH-type models, extreme-value theory and normal-mixture); Principal Component Analysis and VaR; Backtesting and stress testing.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand VaR and expected shortfall as risk measures. 2. Compute VaR and expected shortfall. 3. Model volatility using GARCH-type models. 4. Understand extreme-value theory. 5. Understand backtesting and stress testing.		
Pre-requisites (and Co-requisites and Impermissible combination)	(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)]		
Offer in 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments, tutorials, and a class test)	40
Examination	One 2-hour written examination	60

Required/recommended reading and online materials	Jorion, P.: Value-at-Risk: The New Benchmark for Managing Financial Risk (McGraw-Hill, 2007, 3rd edition) Alexander, C.: Market Models: A Guide to Financial Data Analysis (Wiley, 2001) Alexander, C.: Market Risk Analysis: Practical Financial Econometrics (Wiley, 2008) Alexander, C.: Market Risk Analysis: Value-at-Risk Models (Wiley, 2009) Tsay, R. S.: Analysis of Financial Time Series (Wiley, 2005, 2nd edition)
Course Website	moodle.hku.hk

STAT4711 Capstone experience for actuarial science undergraduates (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof W K Li, Statistics & Actuarial Science *(saas@hku.hk)*		
Teachers Involved	Prof W K Li, Statistics & Actuarial Science		
Course Objectives	This project-based course aims to provide students with capstone experience to formulate and investigate practical problems in actuarial science by integrating and applying actuarial theories and techniques learnt in their university years. It aims to help the students to establish a good and solid foundation of self-learning skills, and to enable students to equip with hands-on experience in solving practical problems including definition of the problem, designing the solution, and presentation of the results.		

Course Contents & Topics	No formal teaching will be given for this course. Students are expected to devote 120-140 hours working on this project. Students will work in groups of four or five under the supervision of a teacher and/or an industry supervisor. Students are required to give a presentation on their work two to three weeks before the end of the semester, and submit their final report at the end of the semester. Topics acceptable for projects in this course can be related to any of the traditional actuarial areas of practice such as life insurance, pension, finance, investment, enterprise risk management and general insurance. Students are also encouraged to suggest topics in non-traditional actuarial areas provided they can find a suitable teacher and/or industry supervisor. All topics for this course will be subject to final approval by the Department to ensure relevance to actuarial science. Students will need to decide on the topic for a practical project, conduct market research regarding industry activities related to the topic, and make suggestion on a solution of the problem identified in their project.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. define a practical problem, discuss the issues faced by different stakeholders, and design workable solutions for the problems. 2. integrate theoretical results and practical approaches, and to specify limitations of current developments. 3. work in a team and to collaborate with members with different background. 4. deliver actuarial results effectively in a written report and in oral presentations. 5. develop further logical, critical thinking, creativity, technical report writing, communication and consultation skills. 6. explain to a non-actuarial audience the approaches of actuarial science as applied to problems in a financial security system.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including (STAT3901 Life contingencies, or already enrolled in this course; or Pass in STAT3909 Advanced life contingencies, or already enrolled in this course); and This capstone course is for BSc(Actuarial Science) students only.
Offer in 2014 - 2015	N — **Examination** ---
Offer in 2015 - 2016	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: Project-based course

Course Teaching & Learning Activities

Activities	Details	No. of Hours
Reading / Self study	Tutorials, group work/project, reading/self-study	120

Assessment Methods and Weighting

Methods	Details	Weighting in final course grade (%)
Research report	Written report and oral presentation	100

Course Website: moodle.hku.hk

STAT4767 Actuarial science internship (6 credits)

Academic Year: 2014

Offering Department	Statistics & Actuarial Science — **Quota**: ---
Course Co-ordinator	Dr L F K Ng, Statistics & Actuarial Science *(flouisng@hku.hk)*
Teachers Involved	Various teachers as the assessors of oral presentations and written reports, Statistics & Actuarial Science
Course Objectives	This course is offered to actuarial science students who take on an 6-month full time or similar internships. The objective is for a student to complete this course as a project based on his/her internship.
Course Contents & Topics	This course will include a written report which should emphasize important working/ educational experiences encountered by the student during his/her internship. In many situations, this would mean a report of the project(s) that the student has been involved in during his/her internship.
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Gain practical experiences during internship. 2. Describe basic actuarial practices learned during the internship.

	3. Explain how actuarial theories learned in University can be applied in practice. 4. Provide context for specific technical skills developed in basic actuarial courses.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including STAT3901 Life contingencies; and This capstone course is for BSc(Actuarial Science) students only.
Offer in 2014 - 2015	Y 2nd sem **Examination** No Exam
Offer in 2015 - 2016	Y
Course Grade	Pass/Fail
Grade Descriptors	**Pass**: Able to apply knowledge to solve problems in the workplace. Successfully handles and carries out the work required in the job or assigned by supervisor(s). Establishes effective collaboration and communication with supervisor(s), colleagues, and clients in the job. Successfully fulfills the requirements set out in the Course Description regarding working hours, written and oral report, and evaluation by supervisor(s), etc. Students demonstrating excellent performance in the above would be awarded a grade of "Distinction". **Fail**: Very limited or no ability to solve problems in the workplace. Fails to handle or carry out the work required in the job or assigned by supervisor(s). Fails to establish effective collaboration or communication with supervisor(s), other colleagues, or clients in the job. Fails to satisfy the requirements set out in the Course Description regarding working hours, written and oral report, or evaluation by supervisor(s), etc.
Course Type	Internship
Course Teaching & Learning Activities	**Activities**: Internship work **Details**: it is expected that students are to work at least 160 hours (or the equivalent of 4 weeks full-time) **No. of Hours**: 160
Assessment Methods and Weighting	**Methods**: Written report **Details**: written report, employer's feedback and oral presentation **Weighting in final course grade (%)**: 100
Course Website	moodle.hku.hk
Additional Course Information	Students are expected to have satisfactorily completed their Year 3 study. Special consideration be given to those who have completed Year 2. Satisfactory completion of this course can be counted towards the Capstone requirement. Details of internship will be recorded on the student's transcript. This course will be assessed on "Pass, Fail and Distinction" basis. Students who are interested to enrol in this course should contact the Department to obtain the approval. Enrolment of this course is not conducted via the online course selection system and should be made through the relevant Department/School office after approval has been obtained from the course coordinator.

STAT4798 Statistics and actuarial science project (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof S M S Lee, Statistics & Actuarial Science *(smslee@hku.hk)*		
Teachers Involved	Various teachers as the assessors of oral presentations and written reports, Statistics & Actuarial Science		
Course Objectives	Each year a few projects suitable for Actuarial Science students will be offered to provide students with practical experience in approaching a real problem, in report writing and in oral presentation.		
Course Contents & Topics	These projects, under the supervision of individual staff members, involve the applications of statistics and/or probability in a wide range of problems of practical and/or academic interests.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Formulate meaningful research problems. 2. Learn and apply advanced techniques in probability and/or statistics to solve real life problems. 3. Summarize and present research findings in a professional manner.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in at least 24 credits of advanced level compulsory/core courses (STAT3XXX, STAT4XXX or STAT6XXX) in BSc(Actuarial Science) programme including 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 This capstone course is for BSc(Actuarial Science) students only.		
Offer in 2014 - 2015	N	**Examination**	---
Offer in 2015 - 2016	Y		
Course Grade	A+ to F		
Grade Descriptors	**A**: Demonstrate thorough grasp of the subject. Show strong analytical and critical abilities and logical thinking, with evidence of original thought. Insightful use and critical analysis / evaluation of information drawn from a full range of high quality sources and to quote/reference aptly. Critical use of data and results to draw appropriate and insightful conclusions. Apply highly effective organizational and presentational skills. [Work of A+ should show considerable additional work beyond that is required in wider areas relevant to the topic.] **B**: Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use of relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretations and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational and presentational skills.		

	C Demonstrate general but incomplete grasp of the subject. Evidence of some analytical and critical abilities and logical thinking. Use of relevant information from sources, showing ability to make comparisons between different interpretations and to quote/reference aptly. Mostly correct but some erroneous use of data and results to draw appropriate conclusions. Apply moderately effective organizational and presentational skills.
	D Demonstrate partial but limited grasp, with retention of some relevant information, of the subject. Evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Demonstrate use and reference of several sources, but mainly through summary rather than analysis and comparison. Limited ability to use data and results to draw appropriate conclusions. Apply limited or barely effective organizational and presentational skills.
	Fail Demonstrate evidence of little or no grasp of the knowledge and understanding of the subject. Evidence of little or lack of analytical and critical abilities, logical and coherent thinking. Limited use of secondary sources and no critical comparison of them. Misuse of data and results and/or unable to draw appropriate conclusions. Organization and presentational skills are minimally effective or ineffective.
Course Type	Project-based course
Course Teaching & Learning Activities	**Activities** / **Details** / **No. of Hours** Reading / Self study / 120
Assessment Methods and Weighting	**Methods** / **Details** / **Weighting in final course grade (%)** Oral presentation / oral presentation & in-class discussion / 50 Research report / written report / 50
Course Website	moodle.hku.hk
Additional Course Information	Approval is subject to past academic performance.

STAT4901 Risk theory II (6 credits)		**Academic Year**	**2014**
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 an advanced course in risk theory which extends various topics discussed in STAT3906. It discusses utility theory, ruin theory, aggregate claims process, and related topics.		
Course Contents & Topics	Utility theory; discrete ruin model; compound Poisson risk model; ruin probability; reinsurance; adjustment coefficient; Lundbergs inequality; Tijms approximation; non-homogeneous birth process; contagion model; mixed Poisson process; inflation model; IBNR (Incurred But Not Reported) claims; mixed Erlang distributions; stop-loss moments; equilibrium distributions.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand utility theory including some commonly used utility functions, Jensens inequality, risk aversion and utility maximization. 2. Define discrete and continuous ruin models. 3. Calculate the adjustment coefficient, Lundbergs inequality and Tijms approximation in ruin theory. 4. Understand the effect of reinsurance and change of parameters on ruin probability. 5. Understand non-homogeneous birth process and its applications as contagion models for claim frequencies. 6. Understand mixed Poisson process and its applications including the inflation model and the IBNR model. 7. Derive the relationship between stop-loss moments and equilibrium distributions.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3906 Risk theory I		
Offer in 2014 - 2015	Y 2nd sem	**Examination**	May
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 3-hour written examination	75

Required/recommended reading and online materials	Klugman S.A., Panjer H.H., & Willmot G.E.: Loss Models: From Data to Decisions (John Wiley & Sons, 2007, 3rd edition). Kaas R., Goovaerts M., Dhaene J., & Denuit M.: Modern Actuarial Risk Theory (Springer, 2004, 1st edition). Bowers N.L., Gerber H.U., Hickman J.C. & Jones D.A.: Actuarial Mathematics (Society of Actuaries, 1997, 2nd edition). Willmot G.E. & Lin X.S.: Lundberg Approximations for Compound Distributions with Insurance Applications (Springer, 2000, 1st edition).
Course Website	moodle.hku.hk

STAT4902 Selected topics in actuarial science (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	TBC, Statistics & Actuarial Science *()*		
Teachers Involved	TBC, Statistics & Actuarial Science		
Course Objectives	This course is an advanced course in actuarial science which discusses selected topics which potential graduate students will find useful. It focuses on tools that are in the frontier of actuarial science with examples on applications.		
Course Contents & Topics	The contents will be chosen from the following topics: Coherent risk measures; Premium calculation principles; Copulas; Extreme value theory; Stochastic dominance; Ordering of risks; Renewal equations with insurance applications; Reliability properties; Generalized linear models; Comonotonicity; Measures of dependency; Phase-type distributions; Applications to enterprise risk analysis; Other topics as determined by the instructor.		
Course Learning Outcomes	On successful completion of the course, students should be able to: 1. Understand the mathematical tools useful for further research and applications. 2. Apply the tools to solve potentially unseen problems.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3906 Risk theory I		
Offer in 2014 - 2015	N	**Examination**	---
Offer in 2015 - 2016	N		
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 (%)
	Coursework (assignments,	

	Assignments	tutorials and class test(s))	40
	Examination		60
Required/recommended reading and online materials	- Kaas R., Goovaerts M., Dhaene J., & Denuit M.: Modern Actuarial Risk Theory (Springer, 2004, 1st edition). - Denuit M., Dhaene J., Goovaerts M., & Kaas R.: Actuarial Theory for Dependent Risks (Wiley, 2005, 1st edition). - Willmot G.E. & Lin X.S.: Lundberg Approximations for Compound Distributions with Insurance Applications (Springer, 2000, 1st edition). - McNeil A.J., Frey R. & Embrechts, P.: Quantitative Risk Management: Concepts, Techniques, and Tools (Princeton University Press, 2005, 1st edition).		
Course Website	moodle.hku.hk		

STAT6110 Advanced probability (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof Y Lam, Statistics & Actuarial Science *(lamy@hku.hk)*		
Teachers Involved	Prof Y Lam, Statistics & Actuarial Science		
Course Objectives	This course provides an introduction to measure theory and probability. The course will focus on some basic concepts in theoretical probability which are important for students to do research in actuarial science, probability and statistics.		
Course Contents & Topics	sigma-algebra, measurable space, measure and probability, measure space and probability space, measurable functions, random variables, integration theory, characteristic functions, convergence of random variables, Hilbert spaces, conditional expectation, martingales.		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the fundamental measure theory and probability theory. 2. Learn the general concept of integration, understand the monotone convergence theorem, Fatou's lemma and dominated convergence theorem. 3. Understand the concept of conditional expectation. 4. Have some elementary knowledge of martingale.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3603 Probability modelling or STAT3903 Stochastic models		
Offer in 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	50
Examination	One 2-hour written examination	50

Required/recommended reading and online materials	Jean Jacod and Philip Protter: Probability Essentials (Universitext, Springer-Verlag, New York, 2004, 2nd edition) Chung K. L.: A Course in Probability Theory (Academic Press, 2001, 3rd edition)
Course Website	moodle.hku.hk

STAT6111 Computational statistics (6 credits)		**Academic Year**	**2014**
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 aims to give undergraduate and postgraduate students in statistics a background in modern computationally-intensive methods in statistics. It emphasizes the role of computation as a fundamental tool of discovery in data analysis, of statistical inference, and for development of statistical theory and methods.		
Course Contents & Topics	Contents include: Numerical optimization and integration, EM algorithm and its variants, Simulation and Monte Carlo integration, Importance sampling and variance reduction techniques, Markov chain Monte Carlo methods, and Bootstrap methods.		
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Understand the importance of the technique for generating random variables in Bayesian statistics, Monte Carlo integration and bootstrapping methods. 2. Realize the advantages and disadvantages of the Newton-Raphson algorithm and the Fisher scoring algorithm and apply them to fit generalized linear models. 3. Understand the essence and basic principle of the EM-type algorithms and MM-type algorithms, realize their range of application, and apply them to solve practical problems. 4. Apply EM-type algorithms to find the posterior mode and apply Markov chain Monte Carlo methods to generate posterior samples. 5. Apply Bootstrap methods to obtain estimated standard errors of estimators and confidence intervals of parameters for both parametric and non-parametric cases.		
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting		
Offer in 2014 - 2015	Y 1st sem	**Examination**	Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, practical work, and a term test)	50
Examination	One 2-hour written examination	50

Required/recommended reading and online materials	Tan, M., Tian, G.L. and Ng, K.W: Bayesian Missing Data Problems: EM, Data Augmentation and Non-iterative Computation (Chapman & Hall/CRC, Boca Raton, 2010). Givens, G.H. and Hoeting, J.A.: Computational Statistics (Wiley, 2005) Robert, C.P. and Casella, G.: Monte Carlo Statistical Methods (Springer, 2005, 2nd edition)
Course Website	moodle.hku.hk

STAT6115 Advanced quantitative risk management and finance (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Prof W K Li, Statistics & Actuarial Science *(hrntlwk@hku.hk)*		
Teachers Involved	Prof W K Li, Statistics & Actuarial Science		
Course Objectives	This course covers statistical methods and models of importance to risk management and finance and links finance theory to market practice via statistical modeling and decision making. Emphases will be put		

	on empirical analyses to address the discrepancy between finance theory and market data.
Course Contents & Topics	Basic Monte Carlo and Quasi-Monte Carlo Methods; Variance Reduction Techniques; Simulating the value of options and the value-at-risk for risk management; Review of univariate volatility models; multivariate volatility models; Stochastic interest rate models; Extreme value theory for risk management.
Course Learning Outcomes	On successful completion of this course, students should be able to: 1. Apply Monte Carlo methods to determine the value of options and other derivative securities. 2. Predict volatility of a set of securities using appropriate models. 3. Estimate the value-at-risk under extreme value theory.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT4608 Market risk analysis
Offer in 2014 - 2015	N **Examination** ---
Offer in 2015 - 2016	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 (%)
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination		75

Required/recommended reading and online materials

McLeish, Don L.: Monte Carlo Simulation & Finance. (Wiley, 2005).
Glasserman, Paul: Monte Carlo Methods in Financial Engineering. (Springer, 2003).
Danielsson Jon: Financial Risk Forecasting (Willy 2011)
McNeil, A. J., Frey, R. & Embrechts, P.: Quantitative Risk Management (Princeton, 2005)
Tsay, R.S.: Analysis of Financial Time Series (Wiley, 2010, 3rd edition)

Course Website: moodle.hku.hk

STAT7109 Research methods in statistics (6 credits)		**Academic Year**	**2014**
Offering Department	Statistics & Actuarial Science	**Quota**	---
Course Co-ordinator	Dr J F Yao, Statistics & Actuarial Science *(jeffyao@hku.hk)*		
Teachers Involved	Dr J F Yao, Statistics & Actuarial Science		
Course Objectives	This course introduces some statistical concepts and methods which potential graduate students will find useful in preparing for work on a research degree in statistics. Focus is on applications of state-of-the-art statistical techniques and their underlying theory.		
Course Contents & Topics	Contents may be selected from: 1. Basic asymptotic methods: modes of convergence; stochastic orders; laws of large numbers; central limit theorems; delta method; Edgeworth expansions; saddlepoint approximations. 2. Parametric and nonparametric likelihood methods: high-order approximations; profile likelihood and its variants; signed likelihood ratio statistics; empirical likelihood. 3. Nonparametric statistical inference: sign and rank tests; Kolmogorov-Smirnov test; nonparametric regression; density estimation; kernel methods. 4. Computationally-intensive methods: cross-validation; bootstrap; permutation methods. 5. Robust methods: measures of robustness; M-estimator; L-estimator; R-estimator; estimating functions. 6. Sequential analysis: sequential probability ratio test; sequential estimation. 7. Model selection using information criteria. 8. Other topics as determined by the instructor.		
Course Learning Outcomes	On successful completion of the course, students should be able to:		

	1. Comprehend the language and technicalities found in statistical research literature. 2. Understand the use of standard mathematical tools for conducting statistical research. 3. Apply a variety of research tools to solve standard statistical problems. 4. Acquire exposure to some developments in contemporary statistical research.
Pre-requisites (and Co-requisites and Impermissible combination)	Pass in STAT3600 Linear statistical analysis or STAT3907 Linear models and forecasting
Offer in 2014 - 2015	Y 1st sem **Examination** Dec
Offer in 2015 - 2016	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 (%)**
Assignments	Coursework (assignments, tutorials, and a class test)	25
Examination	One 2-hour written examination	75

Required/recommended reading and online materials	DasGupta, A. (2008). Asymptotic Theory of Statistics and Probability. Springer:. Efron, B. and Tibshirani, R.J. (1993). An Introduction to the Bootstrap. Chapman & Hall: New York. Owen, A.B. (2001). Empirical Likelihood. Chapman & Hall: Boca Raton. Shao, J. (1999). Mathematical Statistics. Springer: New York. Wasserman, L. (2006). All of Nonparametric Statistics. Springer.
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]

Regulations for First Degree Curricula (for students admitted under the 4-year '2012 curriculum' to the first year of first degree curricula in 2014-15 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

[1] These regulations are applicable to candidates admitted from 2014-15 onwards to the first year of first degree curricula 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. 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.

(The Regulations for First Degree Curricula applicable to cohorts admitted in 2012-13 and 2013-14 under the 4-year '2012 curriculum' can be found in the Calendar for 2013-14, and in the Calendar for 2012-13 for the cohort admitted in 2012-13 under the 3-year '2010 curriculum'.)

as specified in the syllabuses for a degree 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 before admission to the curriculum. 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, comprising at least one and not more than two courses from each Area of Inquiry[5] with not more than one course from the same Area of Inquiry being selected within one academic year except where candidates are required to make up for failed credits; 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 suspended under Statute XXXI shall not be allowed to take, present themselves for, and participate in any assessments during the period of suspension, unless otherwise permitted by the Senate.

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

(e) 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.

(f) 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

[6] UG 8 is not applicable to the respective Professional Core of the BDS and MBBS curricula.

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

UG 9 Honours classifications:

(a) Honours classifications shall be awarded in five divisions[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 curricula.

REGULATIONS FOR FIRST DEGREE CURRICULA[1]

Regulations for First Degree Curricula (for students admitted under the 4-year '2012 curriculum' to the first year of fist degree curricula in 2012-13 and 2013-14)

(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 2013-14. 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

[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 2014-2015 for Undergraduate and Taught Postgraduate Students

	SUN	MON	TUE	WED	THUR	FRI	SAT	Week	
		1	2	3	4	5	6	1	**FIRST SEMESTER: SEP 1 - DEC 23, 2014**
SEP-14	7	8	[9]	10	11	12	13	2	First Day of Teaching: Sep 1, 2014
	14	15	16	17	18	19	20	3	
	21	22	23	24	25	26	27	4	
	28	29	30					5	
				[1]	[2]	3	4		
OCT-14	5	6	7	8	9	10	11	6	
	12	13	14	15	16	17	18	7 (Reading)	Reading/ Field Trip Week: Oct 13 - 18, 2014
	19	20	21	22	23	24	25	8	
	26	27	28	29	30	31		9	
							1		
NOV-14	2	3	4	5	6	7	8	10	
	9	10	11	12	13	14	15	11	
	16	17	18	19	20	21	22	12	
	23	24	25	26	27	28	29	13	Last Day of Teaching: Nov 29, 2014
	30								
		1	2	3	4	5	6	14 (Revision)	Revision Period: Dec 1 - 5, 2014
DEC-14	7	8	9	10	11	12	13	15	Assessment Period: Dec 6 - 23, 2014
	14	15	16	17	18	19	20	16	
	21	22	23	(24)	[25]	[26]	27	17	
	28	29	30	<31>				18 (Break)	
					[1]	2	3		
	4	5	6	7	8	9	10	19 (Break)	
JAN-15	11	12	13	14	15	16	17	20 (Break)	**SECOND SEMESTER: JAN 19 - MAY 30, 2015**
	18	19	20	21	22	23	24	21	First Day of Teaching: Jan 19, 2015
	25	26	27	28	29	30	31	22	
	1	2	3	4	5	6	7	23	
FEB-15	8	9	10	11	12	13	14	24	
	15	16	17	<18>	[19]	[20]	[21]	25	Class Suspension Period for the Lunar New Year:
	22	23	24	25	26	27	28	26 (Suspension)	Feb 19 - 25, 2015
	1	2	3	4	5	6	7	27	
MAR-15	8	9	10	11	12	13	14	28 (Reading)	Reading/ Field Trip Week: Mar 9 - 14, 2015
	15	(16)	17	18	19	20	21	29	
	22	23	24	25	26	27	28	30	
	29	30	31					31	
				1	2	[3]	[4]		
APR-15	5	[6]	[7]	8	9	10	11	32	
	12	13	14	15	16	17	18	33	
	19	20	21	22	23	24	25	34	
	26	27	28	29	30			35	
						[1]	2		Last Day of Teaching: May 2, 2015
	3	4	5	6	7	8	9	36 (Revision)	Revision Period: May 4 - 9, 2015
MAY-15	10	11	12	13	14	15	16	37	Assessment Period: May 11 - 30, 2015
	17	18	19	20	21	22	23	38	
	24	[25]	26	27	28	29	30	39	
	31								
		1	2	3	4	5	6	40 (Break)	
	7	8	9	10	11	12	13	41 (Break)	
JUN-15	14	15	16	17	18	19	[20]	42 (Break)	
	21	22	23	24	25	26	27	43 (Break)	**OPTIONAL SUMMER SEMESTER**
	28	29	30					44	Jun 29 - Aug 22, 2015
				[1]	2	3	4		
JUL-15	5	6	7	8	9	10	11	45	
	12	13	14	15	16	17	18	46	
	19	20	21	22	23	24	25	47	
	26	27	28	29	30	31		48	
							1		
AUG-15	2	3	4	5	6	7	8	49	
	9	10	11	12	13	14	15	50	
	16	17	18	19	20	21	22	51	
	23	24	25	26	27	28	29	52 (Break)	
	30	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, Wednesdays and Thursdays, 12 Fridays, and 12 Saturdays

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

Useful contacts and websites

Faculty of Science	Office Location	:	Ground Floor, Chong Yuet Ming Physics Building
	Tel	:	3917 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