BSc in Actuarial Science

Syllabuses and Regulations (4-year curriculum)

2016-17

Faculty of Science

The University of Hong Kong

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SECTION I Objectives and Learning Outcomes

Degree : Bachelor of Science in Actuarial Science

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

Learning Outcomes of Actuarial Science Programme

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

- 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)
- 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) 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.

List of BSc(ActuarSc) Courses* on offer in 2016/17 and 2017/18^{*} SECTION III

List of BSc(ActuarSc) Courses

Course Code	Title	Credit	it Pre-requisite	Availa	able in	offered in	held in 2016-2017	Quota	ota Course Coordinator TBC = To be confirmed	Programme / Major / Minor (The Programme/Major/Minor that this course appears as)			
						0=year long 1=1st sem 2=2nd sem S=Summer				Disciplinary Core Course	Disciplinary Elective	Capstone - Disciplinary Core Course	Capstone - Disciplinary Elective
	Applied English Studies	6		Y	Y	4.0	Dec Mau		Da N. Fara				
	Core University English		NIL			1, 2	Dec, May		Dr N Fong, English				
CAES9820	Academic English for science students	6	NIL	Y	Y	1, 2	No Exam		Ms E Law, English				
School of (Chinese	1											
CSCI9001	Practical Chinese for science students	6	NIL	Y	Y	1, 2	Dec, May		Mr K W Wong, Chinese				
Departmen	t of Mathematics											1 1	
	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 Not for students who have passed MATH1013 or (MATH1851 and MATH1853), or have already enrolled in these courses. For BSc(ActuarSc) students only.	Y	Y	1	Dec		Dr J T Chan, Mathematics	BSc in Actuarial Science (2016,2015,2014,2013,2012)			
MATH2822	Mathematical methods for actuarial science II	6	Pass in MATH1821. For BSc(ActuarSc) students only.	Y	Y	2	May		Dr J T Chan, Mathematics	BSc in Actuarial Science (2016,2015,2014,2013,2012)			
Denartmen	t of Statistics & Actuaria	l Sciene											
STAT2901	Probability and statistics: foundations of actuarial science	6	Pass in MATH1821 [for BSc(ActuarSc) students] or already enrolled in this course, or Pass in MATH1013 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, STAT1602, STAT2601, STAT1603	Y	Y	2	May		Prof J J F Yao, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)		
STAT2902	Financial mathematics	6	Pass in STAT2901, or already enrolled in this course; and Not for students who have passed in STAT3615, or already enrolled in this course.	Y	Y	2	Мау		Prof K C Yuen, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)			
	Statistical inference		Pass in STAT2602 or STAT3902	Y	Y	1	Dec		Prof S M S Lee, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Statistics (2016,2015,2014,2013,2012); Minor in Statistics (2016,2015,2014,2013,2012)		
STAT3612	Data mining	6	Pass in STAT2602 or (STAT1603 and any University level 2 course) or STAT3902 Co-requisites: STAT3600	Y	Y	1, 2	No exam	50	Dr G C S Lui, Statistics & Actuarial Science	Major in Decision Analytics (2016,2015,2014,2013,2012)	BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Risk Management (2016,2015,2014,2013,2012); Major in Statistics (2016,2015,2014,2013,2012); Minor in Risk Management (2016,2015,2014,2013,2012); Minor in Statistics (2016,2015,2014,2013,2012)		

* 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 2017-2018 is subject to change.

Course Code	Title	Credit	Credit	Credit	Credit	Credit	Pre-requisite	Avail	able in	Semester offered in 2016-2017	Exam held in 2016-2017	Quota	Course Coordinator	(The P	Programme / Major / rogramme/Major/Minor that th		rs as)
						0=year long 1=1st sem 2=2nd sem S=Summer			TBC = To be confirmed	Disciplinary Core Course	Disciplinary Elective	Capstone - Disciplinary Core Course	Capstone - Disciplinary Elective				
	t of Statistics & Actuaria									-	-						
	Advanced SAS programming		Pass in STAT2601 or STAT2901 (Students are strongly recommended to take STAT2603 prior to taking this course.)	Y	Y	2	May	50	Prof K W Ng, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Decision Analytics (2016,2015,2014,2013,2012); Major in Statistics (2016,2015,2014,2013,2012); Minor in Statistics (2016,2015,2014,2013,2012)						
STAT3901	Life contingencies	6	(Pass in STAT2602 and STAT3615) or (Pass in STAT2902 and (Pass in STAT3902 or already enrolled in this course)) or (Pass in STAT2602 and STAT2902)		Y	1	Dec		Prof K C Yuen, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)						
STAT3902	Statistical models	6	Pass in STAT2901; and Not for students who have passed in STAT2602, or already enrolled in this course; and For BSc(Actuarial Science) students only.		Y	1	Dec		Dr J F Xu, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)							
STAT3903	Stochastic models	6	Pass in STAT2901; and Not for students who have passed in MATH3603, or have already enrolled in this course; and Not for students who have passed in STAT3603, or have already enrolled in this course; and For BSc(Actuarial Science) students only.		Y	2	Мау		Dr Y K Chung, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)							
STAT3904	Corporate finance for actuarial science	6	[(Pass in ACCT1101 and STAT2902) or (Pass in STAT3610 and STAT3615)]; and Not for students who have passed in FINA1310, or have already enrolled in this course.	Y	Y	2	Мау		Dr J K Woo, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)						
STAT3905	Introduction to financial derivatives	6	Pass in STAT2902; and Not for students who have passed in STAT3618, or have already enrolled in this course; and Not for students who have passed in FINA2322, or have already enrolled in this course; and For BSc(Actuarial Science) students only.		Y	1	Dec		Dr E C K Cheung, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)							
STAT3906	Risk theory I	6	Pass in STAT3903, or already enrolled in this course; or Pass in MATH3603 or STAT3603	Y	Y	2	Мау		Dr K C Cheung, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)						

Course Code	Title	Credit	Pre-requisite	Available in		Semester offered in 2016-2017	Exam held in 2016-2017	Quota	ta Course Coordinator	Programme / Major / Minor (The Programme/Major/Minor that this course appears as)				
						0=year long 1=1st sem 2=2nd sem S=Summer			TBC = To be confirmed	Disciplinary Core Course	Disciplinary Elective	Capstone - Disciplinary Core Course	Capstone - Disciplinary Elective	
	t of Statistics & Actuarial					2			D 011					
	Linear models and forecasting		Pass in STAT2602 or STAT3902, or already enrolled in this course; and Not for students who have passed in STAT3600, or have already enrolled in this course; and Not for students who have passed in STAT4601, or have already enrolled in this course; and Not for students who have passed in ECON2280, or have already enrolled in this course; and For BSc(Actuarial Science) students only.		Y	2	May		Dr G Li, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)				
STAT3908	Credibility theory and loss distributions	6	Pass in STAT2602 or STAT3902 or STAT3906	Y	Y	1	Dec		Dr K C Cheung, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)			
STAT3909	Advanced life contingencies	6	Pass in STAT3901, or already enrolled in this course; and For BSc(Actuarial Science) students only.	Y	Y	2	Мау		Prof H L Yang, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)				
STAT3910	Financial economics I	6	Pass in STAT2602 or STAT3902; and Not for students who have passed in STAT3618, or have already enrolled in this course; and Not for students who have passed in FINA2322, or have already enrolled in this course.		Y	1	Dec		Prof H L Yang, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Minor in Actuarial Studies (2016,2015,2014,2013,2012)			
STAT3911	Financial economics II	6	Pass in MATH3603 or STAT3603 or STAT3903 or STAT3910	Y	Y	2	Мау		Prof H L Yang, Statistics & Actuarial Science	BSc in Actuarial Science (2016,2015,2014,2013,2012)	Major in Risk Management (2016,2015,2014,2013,2012); Minor in Actuarial Studies (2016,2015,2014,2013,2012)			
STAT3951	Advanced contingencies	6	Pass in STAT3909; and Pass in STAT3910, or already enrolled in this course; and For BSc(Actuarial Science) students only.	Y	Y	1	Dec		Dr E C K Cheung, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)			
STAT3952	Investment and asset management	6	Pass in STAT3901; and Not for students who have passed in FINA2320, or have already enrolled in this course; and For BSc(Actuarial Science) students only.		N				TBC, Statistics & Actuarial Science		BSc in Actuarial Science (2012)			
STAT3953	Fundamentals of actuarial practice	6	Pass in STAT3909; and For BSc(Actuarial Science) students only.	Y	Y	1	No exam		Dr L F K Ng, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)			
STAT3954	Current topics in actuarial science	6	Pass in STAT3901, or already enrolled in this course; or Pass in STAT3909, or already enrolled in this course; and For BSc(Actuarial Science) students only.	Ν	N				Prof W K Li, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)			

Course Code	Title	Credit	Pre-requisite	Availa	able in	Semester offered in 2016-2017	held in	Quota	Course Coordinator	Programme / Major / Minor (The Programme/Major/Minor that this course appears as)			
							0=year long 1=1st sem 2=2nd sem S=Summer			TBC = To be confirmed	Disciplinary Core Course	Disciplinary Elective	Capstone - Disciplinary Core Course
	t of Statistics & Actuaria												
STAT3955	Survival analysis	6	Pass in STAT3902, or already enrolled in this course; or Pass in STAT3600 or STAT3901	Y	Y	2	May		Dr J F Xu, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Statistics (2016,2015,2014,2013,2012); Minor in Statistics (2016,2015,2014,2013,2012)		
STAT3956	Pension funds and pension mathematics	6	Pass in STAT3909	Y	Y	1	Dec		Prof G Ma, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)		
STAT4602	Multivariate data analysis	6	Pass in STAT3600 or STAT3907	Y	Y	2	Мау	50	Prof T W K Fung, Statistics & Actuarial Science	Major in Statistics (2016,2015,2014,2013,2012)	BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Decision Analytics (2016,2015,2014,2013,2012); Minor in Statistics (2016,2015,2014,2013,2012)		
STAT4607	Credit risk analysis	6	Pass or already enrolled in STAT3618 or STAT3905 or STAT3910 or (FINA2322 and any University level 3 course)	Y	Y	2	May		Dr K P Wat, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Risk Management (2016,2015,2014,2013,2012); Minor in Risk Management (2016,2015,2014,2013,2012)		
STAT4608	Market risk analysis	6	Pass in STAT3907 and STAT3910; or Pass in STAT4601 and (FINA2320 or STAT3609)	Y	Y	2	Мау		Dr Z Zhang, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Major in Risk Management (2016,2015,2014,2013,2012); Minor in Risk Management (2016,2015,2014,2013,2012)		
STAT4711	Capstone experience for actuarial science undergraduates	6	Pass in at least 24 credits of advanced level disciplinary core/elective courses in BSc(Actuarial Science) programme including (Pass in STAT3901, or already enrolled in this course; or Pass in STAT3909, or already enrolled in this course); and This capstone course is only for BSc(Actuarial Science) students, and is mutually exclusive with STAT4767 and STAT4798. The earliest that a student is allowed to take this capstone course is their year 3 study.	Y	Y	1, 2	No exam	50	Prof W K Li, Statistics & Actuarial Science				BSc in Actuarial Science (2016,2015,2014,2013,2012)
STAT4767	Actuarial science internship	6	Pass in at least 24 credits of advanced level disciplinary core/elective courses in BSc(Actuarial Science) programme including STAT3901; and This capstone course is only for BSc(Actuarial Science) students; and is mutually exclusive with STAT4711. The earliest that a student is allowed to take this capstone course is their year 3 study.	Y	Y	1, 2	No exam		Dr L F K Ng, Statistics & Actuarial Science				BSc in Actuarial Science (2016,2015,2014,2013,2012)

Course Code	Title	Credit	lit Pre-requisite	Available in			Exam held in 2016-2017	held in	ta Course Coordinator	Programme / Major / Minor (The Programme/Major/Minor that this course appears as)			
						0=year long 1=1st sem 2=2nd sem S=Summer		TBC = To be confirmed	Disciplinary Core Course	Disciplinary Elective	Capstone - Disciplinary Core Course	Capstone - Disciplinary Elective	
	t of Statistics & Actuaria						• •		D. (D. M. C. L		1		
STAT4798	Statistics and actuarial science project		Pass in at least 24 credits of advanced level disciplinary core/elective courses in BSc(Actuarial Science) programme including STAT3902 and STAT3907; and Pass or already enrolled in at least one of the following courses: STAT3616, STAT3911, STAT4601, STAT4602; and This capstone course is only for BSc(Actuarial Science) students; and subject to the consent of course coordinator. This course is mutually exclusive with STAT4711. The earliest that a student is allowed to take this capstone course is their year 3 study.		Y	1, 2	No exam	50	Prof S M S Lee, Statistics & Actuarial Science				BSc in Actuarial Science (2016,2015,2014,2013,2012)
STAT4901	Risk theory II	6	Pass in STAT3906	Y	Y	2	Мау		Dr J K Woo, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)		
STAT4902	Selected topics in actuarial science	6	Pass in STAT3906	N	N				TBC, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012)		
STAT4903	Actuarial techniques for general insurance	6	Pass in STAT3906	Y	Y	2	Мау		Dr L F K Ng, Statistics & Actuarial Science		BSc in Actuarial Science (2016,2015,2014,2013,2012); Minor in Actuarial Studies (2016,2015,2014,2013,2012)		
STAT7609	Research methods in statistics	6	Pass in STAT3600 or STAT3907	Y	Y	1	Dec		Dr J F Xu, Statistics & Actuarial Science				
STAT7610	Advanced probability	6	Pass in STAT3603 or STAT3903	Y	Y	1	Dec		Prof J J F Yao, Statistics & Actuarial Science				
STAT7611	Computational statistics	6	Pass in STAT3600 or STAT3907	Y	Y	1	Dec		Prof G Yin, Statistics & Actuarial Science				
	Advanced quantitative risk management and finance	6	Pass in STAT4608	Y	Y	2	May		Prof W K Li, Statistics & Actuarial Science				

SECTION IV Equivalency of HKDSE and other qualifications

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

Table of Equivalence between HKDSE and Other Qualifications

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.

Programme Title	BSc in Actuarial Science
Offered to students	2016
admitted to Year 1 in	

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:

- PLO 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)
- PLO 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)
- PLO 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)
- PLO 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)
- PLO 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)
- PLO 6: 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 Combinations: Minor in Actuarial Studies

Required courses	(138 credits)
1. Year Courses	
Core courses (42 d	credits):
Disciplinary Core	Courses (42 credits)
ACCT1101	Introduction to financial accounting (6)
ECON1210	Introductory microeconomics (6)
ECON1220	Introductory macroeconomics (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	
Disciplinary Core	Courses (42 credits)
COMP1117	Computer programming (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	
	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	
Disciplinary Electiv	
	s from List A and List B, with at least 12 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)
STAT3953	Fundamentals of actuarial practice (6)
STAT4602	Multivariate data analysis (6)
STAT4902	Selected topics in actuarial science (6)
5. Capstone requirer	nent (6 credits)
At least 6 credits se	elected 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 are expected to be in full-time status for 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.

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	2015
admitted to Year 1 in	

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:

- PLO 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)
- PLO 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)
- PLO 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)
- PLO 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)
- PLO 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)
- PLO 6: 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 Combinations: Minor in Actuarial Studies

Ī	Required courses	(138 credits)
	1. Year I Courses	
	Core courses (42 c	
	Disciplinary Core C	Courses (42 credits)
	ACCT1101	Introduction to financial accounting (6)
	ECON1210	Introductory microeconomics (6)
	ECON1220	Introductory macroeconomics (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	
		Courses (42 credits)
	COMP1117	Computer programming (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	
		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	
	Disciplinary Electiv	
		s from List A and List B, with at least 12 credits from List A:
	<i>List A</i> STAT3951	Advanced contingension (C)
	STAT3951 STAT3954	Advanced contingencies (6) Current topics in actuarial science (6)
	STAT3954 STAT3955	Survival analysis (6)
	STAT3955 STAT3956	Pension funds and pension mathematics (6)
	STAT3956 STAT4607	Credit risk analysis (6)
	STAT4607 STAT4608	Market risk analysis (6)
	31A14000	

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)
STAT3953	Fundamentals of actuarial practice (6)
STAT4602	Multivariate data analysis (6)
STAT4902	Selected topics in actuarial science (6)
5. Capstone requirer	nent (6 credits)
At least 6 credits se	elected 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 are expected to be in full-time status for 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.

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	2014
admitted to Year 1 in	

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:

- PLO1: 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)
- PLO 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)
- PLO3: 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)
- PLO4: 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)
- PLO5: 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)
- PLO 6: 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 Combinations: Minor in Actuarial Studies Required courses (138 credits) 1. Year I Courses **Disciplinary Core Courses (42 credits)** ACCT1101 Introduction to financial accounting (6) ECON1210 Introductory microeconomics (6) ECON1220 Introductory macroeconomics (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 **Disciplinary Core Courses (42 credits)** COMP1117 Computer programming (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 **Disciplinary Core Courses (30 credits)** Linear models and forecasting (6) STAT3907 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

Disciplinary Electives (18 credits)

At least 18 credits from List A and List B, with at least 12 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)

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STAT4903	Actuarial techniques for general insurance (6)			
List B				
STAT3602	Statistical inference (6)			
STAT3612	Data mining (6)			
STAT3616	Advanced SAS programming (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 sele	ected 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 are expected to be in full-time status for 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.

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	2013
admitted to Year 1 in	

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.

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- PLO5: 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)
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Impermissible Combinations: Minor in Actuarial Studies Required courses (138 credits) 1. Year I Courses **Disciplinary Core Courses (42 credits)** ACCT1101 Introduction to financial accounting (6) ECON1210 Introductory microeconomics (6) ECON1220 Introductory macroeconomics (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 **Disciplinary Core Courses (42 credits)** COMP1117 Computer programming (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 **Disciplinary Core Courses (30 credits)** Linear models and forecasting (6) STAT3907 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 **Disciplinary Electives (18 credits)** At least 18 credits from List A and List B, with at least 12 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)			
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 are expected to be in full-time status for 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. The course title of ECON1210 Introductory microeconomics in 2013-14 or before is Introduction to economics I.

4. The course title of ECON1220 Introductory macroeconomics in 2013-14 or before is Introduction to economics II.

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	2012
admitted to Year 1 in	

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.

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- PLO 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)
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- PLO5: 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)
- cal knowledge in some specially designed courses (by sed project in the curriculum)

		COULSE WORK and	a latorial classes and/or research-based project in t
	PLO 6 :		actuarial issues and acquire and apply practical kn ework and tutorial classes and/or research-based
		issible Combin Actuarial Studies	
1	Requir	ed courses (13	38 credits)
	1. Year	r I Courses	
	Discip	linary Core Cou	rses (42 credits)
	AC	CT1101	Introduction to financial accounting (6)
	EC	ON1210	Introductory microeconomics (6)
	EC	ON1220	Introductory macroeconomics (6)
	MA	TH1821	Mathematical methods for actuarial science I (6)
		TH2822	Mathematical methods for actuarial science II (6)
	ST/	AT2901	Probability and statistics: foundations of actuarial
			science (6)
	-	AT2902	Financial mathematics (6)
		r II Courses	
	•		rses (42 credits)
		MP1117	Computer programming (6)
		AT3901	Life contingencies (6)
	-	AT3902	Statistical models (6)
	-	AT3903	Stochastic models (6)
	-	AT3904	Corporate finance for actuarial science (6)
	-	AT3905	Introduction to financial derivatives (6)
	-	AT3906	Risk theory I (6)
		r III Courses	
			rses (30 credits)
	-	AT3907	Linear models and forecasting (6)
		AT3908	Credibility theory and loss distributions (6)
		AT3909 AT3910	Advanced life contingencies (6)
		AT3910 AT3911	Financial economics I (6)
	-	r IV Courses	Financial economics II (6)
	4. real	iv Courses	

Disciplinary Electives (18 credits)

At least 18 credits from List A and List B, with at least 12 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 requi	rement (6 credits)	
At least 6 credit	s 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 are expected to be in full-time status for 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. The course title of ECON1210 Introductory microeconomics in 2013-14 or before is Introduction to economics I.

4. The course title of ECON1220 Introductory macroeconomics in 2013-14 or before is Introduction to economics II.

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		niversity English (6	o credits)	Academic Year	2016	
Offering Department	English			Quota		
Course Co-ordinator	Dr N Fon	g, English <i>(fongsn</i> @hk	xu.hk)			
Feachers Involved	Dr N Fon	g, Centre for Applied E	nglish Studies			
Course Objectives						
Course Contents & Topics	proficience Common written ac for and us learning referencir	cy in the university com Core Curriculum. The cademic texts, express se academic sources of modules through the ng skills and understa	(CUE) course aims to enhance fir text. CUE focuses on developing stu ese include the language skills ne academic ideas and concepts clea of information in their writing and sp Moodle platform on academic g nding and avoiding plagiarism. This ersity studies in English, thereby enr	Idents' academic English lar eded to understand and pr rly and in a well-structured r eaking. Students will also co grammar, academic vocab s course will help students	nguage skills for t oduce spoken a manner and sear omplete four onlir ulary, citation a to participate mo	
Course Learning			s course, students should be able to:	v , ,		
Dutcomes	CLO 1 id de CLO 2 fo CLO 3 ar	lentify and distinguish emonstrate an underst orm and express perso	between main ideas and support anding of the arguments / facts expr nal opinions through critical reading position in a clear and structured wa	ting details in lectures and essed and listening		
			grammatical accuracy and lexical app	propriacy in academic comm	unication	
Pre-requisites (and Co-requisites and Impermissible combinations)	NIL					
Offer in 2016 - 2017	Y 1st	t sem 2nd sem Offe	er in 2017 - 2018 : Y	Examination	Dec May	
Grade Descriptors (A+ to F)	A B	appropriately structured. position. Students alway reference correctly at all texts. Written language of comprehensible and fluer Good to very good result with only minor errors. St	result. Students are able to produce spo Students can clearly and concisely explai s use appropriate academic sources to su times. Students demonstrate an ability to fu contains very few, if any, systematic errors it. I. Students are able to produce spoken and udents can almost always clearly and concis tion. Students almost always use appropriat	n academic concepts and criticall oport their ideas in writing and sp lly comprehend and critically interr in grammar and vocabulary. Spok written academic texts which are a ely explain academic concepts and	ly argue for a detaile beaking. They cite ar oret spoken and writte ken language is alway appropriately structure almost always critica	
	C	 speaking. They cite and reference correctly with only a few non-systematic errors. Students can comprehend and interpret text with ease, although they may miss some implied meanings and opinions. Written language is mostly accurate but contains a fev systematic errors in complex grammar and vocabulary. Spoken language is mostly comprehensible and fluent. Satisfactory to reasonably good result. Spoken and written academic texts produced by students are sometimes not-we 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. Student some times 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 difficult comprehending and critically interpreting texts. They can always understand the main ideas but may miss some of the writer' views and attitudes. Written language is some evidence of corror of simple grammar and vocabulary and there is some evidence of corrorl of simple grammatical structures. Spoken language is generally 				
		comprehending and critic views and attitudes. Writ grammar and vocabulary	ally interpreting texts. They can always under ten language is sometimes inaccurate, althor and there is some evidence of control of sin	of correct systematic use. Studer erstand the main ideas but may mi ough errors, when they occur, are	r than critical. Studer and speaking. There a has have some difficu- iss some of the write more often in compl	
	D	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which systematic errors in citatit and referencing. Students ideas and writer's views grammar and vocabulary	cally interpreting texts. They can always under ten language is sometimes inaccurate, altho	of correct systematic use. Studer erstand the main ideas but may mi- pugh errors, when they occur, are pple grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range	r than critical. Studer ind speaking. There a its have some difficu- iss some of the write more often in compl- in language is genera- tely structured but the concepts and argue f for a position. Studer eaking. There are mai e conventions of citati to understand the ma of simple and compl-	
	D Fail	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which systematic errors in citatit and referencing. Student: ideas and writer's views grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produces if this ability. Students are often unable to cleas e evidence of an ability to explain academic or are nonacademic and/or not appropriate to so on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studen and speaking. There a the have some difficul iss some of the writer more often in comple in language is general tely structured but the concepts and argue f for a position. Studen eaking. There are mar e conventions of citatit to understand the ma of simple and comple requently placed on the ten assessments. Texe errors in almost eve	
Course Type	Fail	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which systematic errors in citatit and referencing. Student: ideas and writer's views grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produces if this ability. Students are often unable to cleas e evidence of an ability to explain academic or are nonacademic and/or not appropriate to si on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre- ductive skills are too limited to be able to suc clear. Students are unable to follow and in	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer ind speaking. There a its have some difficu- iss some of the write more often in compl- in language is genera- tely structured but the concepts and argue f for a position. Studer eaking. There are mai e conventions of citati to understand the ma of simple and compl- requently placed on ti- ten assessments. Tex- errors in almost eve	
	Fail	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which systematic errors in citati and referencing. Student: ideas and writer's views a grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produces if this ability. Students are often unable to cleas e evidence of an ability to explain academic or are nonacademic and/or not appropriate to si on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre- ductive skills are too limited to be able to suc clear. Students are unable to follow and in	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer ind speaking. There a its have some difficu- iss some of the write more often in compl in language is genera- tely structured but the concepts and argue I for a position. Studer eaking. There are ma e conventions of citati to understand the ma of simple and compl requently placed on ti ten assessments. Teo errors in almost eve	
Course Teaching	Fail Lecture-b	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which - systematic errors in citati and referencing. Students ideas and writer's views - grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produce; this ability. Students are often unable to clea evidence of an ability to explain academic of are nonacademic and/or not appropriate to s on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre ductive skills are too limited to be able to suc clear. Students are unable to follow and in ge is often incomprehensible. Assessments r	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer and speaking. There a the have some difficu- iss some of the write more often in compl in language is general tely structured but the concepts and argue b for a position. Studer eaking. There are ma e conventions of citati- to understand the ma of simple and compl requently placed on the ten assessments. Teve entrors in almost even inter plagiarism.	
Course Teaching	Fail Lecture-b Activities	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which - systematic errors in citatic and referencing. Students ideas and writer's views - grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua pased course	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produce; this ability. Students are often unable to clea evidence of an ability to explain academic of are nonacademic and/or not appropriate to s on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre ductive skills are too limited to be able to suc clear. Students are unable to follow and in ge is often incomprehensible. Assessments r	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer and speaking. There a the have some difficu- iss some of the write more often in compl in language is general tely structured but the concepts and argue i for a position. Studer eaking. There are ma e conventions of citati to understand the ma of simple and compl requently placed on t ten assessments. Tere errors in almost even thain plagiarism.	
Course Teaching	Fail Lecture-b Activitie: Lectures Tutorials	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which - systematic errors in citatic and referencing. Students ideas and writer's views - grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua pased course	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produce; this ability. Students are often unable to clea evidence of an ability to explain academic of are nonacademic and/or not appropriate to s on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre ductive skills are too limited to be able to suc clear. Students are unable to follow and in ge is often incomprehensible. Assessments r	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer and speaking. There a this have some difficu- iss some of the write more often in compl in language is genera tely structured but the concepts and argue for a position. Studer eaking. There are ma e conventions of citati to understand the ma of simple and compl requently placed on t ten assessments. Te errors in almost even tain plagiarism. No. of Hours 30	
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting	Fail Lecture-b Activitie: Lectures Tutorials	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which - systematic errors in citatic and referencing. Studente ideas and writer's views - grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua pased course s	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produce; this ability. Students are often unable to clea evidence of an ability to explain academic of are nonacademic and/or not appropriate to s on and referencing however there is evidence s often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre ductive skills are too limited to be able to suc clear. Students are unable to follow and in ge is often incomprehensible. Assessments r	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are hele grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range shensible and fluent, and strain is f ccessfully carry out spoken and writt terpret texts. There are language	r than critical. Studer ind speaking. There a the have some difficu- iss some of the write more often in compl in language is genera tely structured but the concepts and argue for a position. Studer caking. There are ma e conventions of citati to understand the ma of simple and compl requently placed on t ten assessments. Teo errors in almost even tain plagiarism. No. of Hours 30 6	
Course Teaching & Learning Activities Assessment Methods	Fail Lecture-b Activities Lectures Tutorials Reading	comprehending and critic views and attitudes. Writ grammar and vocabulary comprehensible and fluer Barely satisfactory result. may be some evidence of a position. There is some often use sources which - systematic errors in citatic and referencing. Student ideas and writer's views a grammar and vocabulary listener. Unsatisfactory result. Pro are unstructured and un sentence. Spoken langua vased course S	ally interpreting texts. They can always und ten language is sometimes inaccurate, altho and there is some evidence of control of sin it but at times places strain on the listener. Spoken and written academic texts produce; this ability. Students are often unable to clea e evidence of an ability to explain academic of are nonacademic and/or not appropriate to sio on and referencing however there is evidence so often have difficulty comprehending and in and attitudes. Written language is often inacc . Spoken language is only sometimes compre- ductive skills are too limited to be able to suc clear. Students are unable to follow and in ige is often incomprehensible. Assessments n Details	of correct systematic use. Studer erstand the main ideas but may mi pugh errors, when they occur, are haple grammatical structures. Spoke d by students are often inappropriat rly and concisely explain academic concepts but not to critically argue upport their ideas in writing and spe of an understanding of some of the terpreting texts, sometimes failing curate containing errors in a range ehensible and fluent, and strain is f cessfully carry out spoken and writt terpret texts. There are language nay not have been attempted or cor weighting in final	r than critical. Studer ind speaking. There a ths have some difficu- iss some of the write more often in compl in language is general tely structured but the concepts and argue for a position. Studer eaking. There are ma e conventions of citati to understand the me of simple and compl requently placed on t ten assessments. Te: errors in almost even tain plagiarism. No. of Hours 30 6 84 Assessment Methods	

CAES9820	Academ	ic English for	science students (6 credits)	Academic Year	2016	
Offering Department	English			Quota		
Course Co-ordinator		, English <i>(ellielav</i>	v@hku.hk)			
Feachers Involved	Ms E Law	, Centre for Appli	ed English Studies			
Course Objectives	Faculty. T their studie within thei	his course will he es. Students will ir division, with c students to identif	he-Discipline course will be offered to elp students develop the necessary skill learn to better communicate and sponta other scientists as well as to a larger a fy their own language needs and develo	s to use both written and sp aneously discuss general and udience. Particular emphasi	oken English with d scientific concep s will be placed c	
Course Contents & Topics	 Finding, Compilin Contrasti Writing for Organizing rammar; Critically 	g an academic b ing academic and or a specific audi ing and articula and / examine their	sing appropriate academic source mater	e, levels of formality; and format including appropria te how that relates to thei		
Course Learning		•	of this course, students should be able to			
Outcomes	CLO 2 pro kn	oduce texts (writt owledge	arize disciplinary sources related to a spe- ien and spoken) appropriate for a cross-	disciplinary audience based	on their disciplinar	
	1		inguage learning needs and implement a	a plan to meet those needs		
Pre-requisites (and Co-requisites and Impermissible combinations)	NIL					
Offer in 2016 - 2017	Y 1st		Offer in 2017 - 2018 : Y	Examination	No Exam	
Grade Descriptors (A+ to F)		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	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	reliable sources. T	It. Does not demonstrate ability to summarize s ext uses no sources and demonstrates serious g eaningful attempt to identify language learning need to identify learning need to identify learning need to identify learning need to identify learning need to ide	grammatical, lexical and/or organization		
Course Type	1	ased course	-			
Course Teaching	Activities	5	Details		No. of Hours 36	
& Learning Activities	Tutorials	Colfotude	seminars	seminars		
		Self study	independent learning work		120 84	
Assessment Methods	Assessme		independent learning work	Malahtina in final	1	
and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping	
	Assignme	ents	independent learning work	20		
	Essay		other genres of writing	55		
	Test			25		
Required/recommended reading and online materials		•	vided electronically through course webs	ite.		
Course Website	http://caes	hku.hk/caes982.	0/			
Additional Course	This a con	nulsony course f	or all students studying undergraduate d	logroop in the Enculty of Soid		

CSCI9001	Practica	I Chinese for scie	nce students (6 credits)	Academic Year	2016			
Offering Department	Chinese			Quota				
Course Co-ordinator	Mr K W W	long, Chinese (kwwon	gb@hkusua.hku.hk)					
Teachers Involved	Dr C M Cl	han, Chinese Dr K	T Lam, Chinese Dr S F Lee, Chinese	Mr K W Wong, Chin	ese			
Course Objectives	students announce	to master the techni ments, notice, brochu s, the style and rhe	e students' competence using Chinese f ques of writing different types of doc res, leaflets, and reports. In addition, to toric of reader-based writings are inc	cuments such as mem pics addressing resenta	os, emails, letters			
Course Contents & Topics	good-new electronic	 Grammar & vocabulary of modern Chinese - The Chinese writing system - Techniques of writing short message good-news and goodwill messages, bad-news messages, and persuasive messages - Techniques of writi electronic documents: emails; presentations - Styles and rhetoric of reader-based reports, proposals a presentations 						
Course Learning	On succe	ssful completion of this	s course, students should be able to:					
Outcomes	CLO 1 de	evelop a balanced com	petency in modern Chinese and write w	ell-formed sentences				
	CLO 2 er	nploy rhetorical device	es and stylistics, as well as practical writing	ng skills specific to their	discipline			
	CLO 3 ex	plore new tactics of co	ommunication, initiate discussions and de	ebates and address new	v challenges			
			nowledge and their Chinese writing skills d creatively in different social or profession		entation techniques			
Pre-requisites (and Co-requisites and Impermissible combinations)	NIL							
Offer in 2016 - 2017	Y 1st	sem 2nd sem Offe	er in 2017 - 2018 : Y	Examination	Dec May			
Grade Descriptors (A+ to F)	A	The student acquired a s	uperb ability to achieve the intended learning outcomesize the language techniques for effective comm	comes of the course at all leve				
(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	В		ability to achieve the intended learning outcomes		earning: describe, apply,			
	C	 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		ic familiarity with the subject.					
	Fail	•	ted familiarity with the subject.					
Course Type		ased course						
Course Teaching	Activities	6	Details		No. of Hours			
& Learning Activities	Lectures				12 12			
	Tutorials			Small group tutorials				
	Group wo		Workshops	24				
	Discussio			24				
		/ Self study	Reading/self study (20 hours) and pro	eparation (12 nours)	32			
Assessment Methods and Weighting	Assessm Methods		Details	Weighting in final course grade (%)	16 Assessment Methods to CLO Mapping			
	Assignme		Self-access & online exercises (40%) and Tutorial disscussion (10%)	50	mabbung			
	Examinat	ion		50				
Required/recommended reading and online materials	港:香港 錫韋复,1 務印書館 意:寫作 東經濟出	大學出版社。 香港城市 1996年。《中文應用寫 。 汪麗炎,1998年。 篇》。香港:香港城市	5大學語文學部,2001年。《中文傳意; 作教程》。香港:三聯書店。 李錦昌, 《漢語寫作》。上海:上海大學出版社。 大學出版社。 經文略、蘭德主編,2001 E。《新編公文寫作學》。成都:四川人E	2000年。《現代商業傳 香港城市大學語文學部 日年。《企業文案撰寫模	战市大學出版社。 唐大全》。香港:商 → 2001年。《中文傳 式大全》。廣州:廣			

MATH1821	Mathema	atical methods	s for actuarial science I (6 credits	s) Academic Y	ear 2016
Offering Department	Mathemati	ics		Quota	
Course Co-ordinator	Dr J T Cha	an, Mathematics	(jtchan@hku.hk)		
Teachers Involved	Dr J T Cha	an, Mathematics	-		
Course Objectives	backgroun single vari	d of calculus of able calculus and	ne two mathematics courses designed to one and several variables and an introd d elementary matrix theory. It aims at st dule 2 background.	uction to linear algebra.	The course focuses or
Course Contents & Topics	 Limits, cc Mean val Bisection Higher or Taylor ap Improper Numerica Basic mat 	n method and New rder derivatives, r oproximation and integrals, partial al integration, Tra	rentiability. icit differentiation; L'Hopital's rule. vton's method. naxima and minima, graph sketching. error estimation. fractions, integration by parts. pezoidal rule and Simpson's rule. if orders 2 and 3) operations, determinar	nts.	
Course Learning	On succes	sful completion c	of this course, students should be able to):	
Outcomes	CLO 1 de	scribe properties	of a function and an inverse function		
	CLO 3 ap		nds of limits, and determine continuity an les/techniques of differentiation and int nctions		
		V 1	als by numerical methods		
			vector operations, compute determinant	ts	
			nd second order ordinary differential equ		
Pre-requisites (and Co-requisites	2, or equiv	alent; and	E Mathematics plus Module 1, or Level		
(and Co-requisites and Impermissible combinations)	2, or equiv Not for stu courses. For BSc(A	alent; and idents who have ctuarSc) students	passed MATH1013 or (MATH1851 and s only.	d MATH1853), or have all	eady enrolled in these
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017	2, or equiv Not for stu courses. For BSc(A Y 1st	ralent; and idents who have .ctuarSc) students sem Offer in 20	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y	MATH1853), or have all Examinatio r	eady enrolled in these
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017	2, or equiv Not for stu courses. For BSc(A	ralent; and idents who have ctuarSc) students sem Offer in 20 Demonstrate an ex- applications througl and being able to ca Demonstrate a good applications through	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas to n correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and y od understanding of key concepts and ideas by n correctly analysing problems, but with some mi	Examination by being able to identify the app ntly presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments	Dec ropriate theorems and their asoning and argumentation s to solving problems. ropriate theorems and their
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	2, or equiv Not for stu courses. For BSc(A Y 1st	ralent; and idents who have ctuarSc) students sem Offer in 20 Demonstrate an ex- applications through and being able to ca Demonstrate a good applications through theorems or their ap Demonstrate an ac but with some ina	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas h n correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by	Examination by being able to identify the app mitly presenting correct logical re with some innovative approache being able to identify the apprinor inadequacies in arguments omputational errors. as by being able to correctly ide	Dec propriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their , identifying the appropriate entify appropriate theorems,
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	2, or equiv Not for stu courses. For BSc(A Y 1st A B	ralent; and idents who have sem Offer in 20 Demonstrate an ex applications through and being able to ca Demonstrate a goo applications through theorems or their ag Demonstrate an ac but with some ina presentation or a n. Demonstrate some substantial inadequ with substantial com Demonstrate poor a	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas la rorrectly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor co- ceptable understanding of key concepts and idea dequacies in applying the theorems through imber of minor computational errors. understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly aputational errors.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Dec ropriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F)	2, or equiv Not for stu courses. For BSc(A Y 1st A B C D Fail	ralent; and idents who have ctuarSc) students sem Offer in 20 Demonstrate an ex applications througi and being able to ca Demonstrate a goo applications througi theorems or their ap Demonstrate an ac but with some ima presentation or a nu Demonstrate some substantial inadequ with substantial com	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas la rorrectly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor co- ceptable understanding of key concepts and idea dequacies in applying the theorems through imber of minor computational errors. understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly aputational errors.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Dec ropriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type	2, or equiv Not for stu courses. For BSc(A Y 1st A B C D Fail	ralent; and udents who have sem Offer in 20 Demonstrate an ex applications through theorems or their a god applications through theorems or their ag Demonstrate an ac but with some ina presentation or a n. Demonstrate some substantial inadequ with substantial con Demonstrate poor a being able to compl ased course	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas la rorrectly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor co- ceptable understanding of key concepts and idea dequacies in applying the theorems through imber of minor computational errors. understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly aputational errors.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Dec propriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	2, or equiv Not for stu courses. For BSc(A Y 1st A B C D Fail Lecture-ba	ralent; and udents who have sem Offer in 20 Demonstrate an ex applications through theorems or their a god applications through theorems or their ag Demonstrate an ac but with some ina presentation or a n. Demonstrate some substantial inadequ with substantial con Demonstrate poor a being able to compl ased course	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas In a correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor coceptable understanding of key concepts and idea dequacies in applying the theorems through understanding of key concepts and ideas dequacies in applying the theorems through understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able t ete the solution.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Dec ropriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	2, or equiv Not for stu courses. For BSc(A Y 1st: A B C D Fail Lecture-ba Activities	ralent; and udents who have sem Offer in 20 Demonstrate an ex applications through theorems or their a god applications through theorems or their ag Demonstrate an ac but with some ina presentation or a n. Demonstrate some substantial inadequ with substantial con Demonstrate poor a being able to compl ased course	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas In a correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor coceptable understanding of key concepts and idea dequacies in applying the theorems through understanding of key concepts and ideas dequacies in applying the theorems through understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able t ete the solution.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Peady enrolled in these propriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their , identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	2, or equiv Not for stu courses. For BSc(A Y 1st: A B C D Fail Lecture-ba Activities Lectures Tutorials	ralent; and udents who have sem Offer in 20 Demonstrate an ex applications through theorems or their a god applications through theorems or their ag Demonstrate an ac but with some ina presentation or a n. Demonstrate some substantial inadequ with substantial con Demonstrate poor a being able to compl ased course	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas In a correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor coceptable understanding of key concepts and idea dequacies in applying the theorems through understanding of key concepts and ideas dequacies in applying the theorems through understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able t ete the solution.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Peady enrolled in these ropriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not No. of Hours 36
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities	2, or equiv Not for stu courses. For BSc(A Y 1st: A B C D Fail Lecture-ba Activities Lectures Tutorials	ralent; and idents who have ctuarSc) students sem Offer in 20 Demonstrate an ex- applications througl and being able to ca Demonstrate a good applications througl theorems or their ap Demonstrate an ac but with some ina- presentation or a nu Demonstrate some substantial inadequi with substantial com Demonstrate poor a being able to compliance	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas In a correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and v d understanding of key concepts and ideas by n correctly analysing problems, but with some minor coceptable understanding of key concepts and idea dequacies in applying the theorems through understanding of key concepts and ideas dequacies in applying the theorems through understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able t ete the solution.	Examination by being able to identify the app nully presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly ide incorrectly analysing problems ing able to correctly identify app y analysing problems with poor	Peady enrolled in these ropriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not No. of Hours 36 12
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities	2, or equiv Not for stu courses. For BSc(A Y 1st : A B C D Fail Lecture-ba Activities Lectures Tutorials Reading /	ralent; and idents who have idents who have sem Offer in 20 Demonstrate an ex- applications throug theorems or their ap Demonstrate a goo applications throug theorems or their ap Demonstrate an ac but with some ima presentation or a nu Demonstrate some substantial con Demonstrate poor being able to compl ased course Self study	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas to in correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and y in correctly analysing problems, but with some minor co- ceptable understanding of key concepts and ideas by incorrectly analysing problems, but with some minor co- ceptable understanding of key concepts and ideas by bei acies in applying the theorems through imber of minor computational errors. understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able to te the solution.	Examination Examination by being able to identify the app ntly presenting correct logical re with some innovative approache being able to identify the appr inor inadequacies in arguments omputational errors. as by being able to correctly iden incorrectly analysing problems ing able to correctly identify app y analysing problems with poor to identify appropriate theorems Weighting in final	Peady enrolled in these propriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not No. of Hours 36 12 100 Assessment Methods
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	2, or equiv Not for stu courses. For BSc(A Y 1st A B C D Fail Lecture-ba Activities Lectures Tutorials Reading / Methods	ralent; and idents who have idents who have sem Offer in 20 Demonstrate an ex- applications throug theorems or their ap Demonstrate a goo applications throug theorems or their ap Demonstrate an ac but with some ima presentation or a nu Demonstrate some substantial con Demonstrate poor being able to compl ased course Self study	passed MATH1013 or (MATH1851 and s only. 117 - 2018 : Y cellent understanding of key concepts and ideas to in correctly analysing problems, clearly and elegar arry out computations carefully and correctly, and y in correctly analysing problems, but with some minor co- ceptable understanding of key concepts and ideas by incorrectly analysing problems, but with some minor co- ceptable understanding of key concepts and ideas by bei acies in applying the theorems through imber of minor computational errors. understanding of key concepts and ideas by bei acies in applying the theorems through incorrectly inputational errors. and inadequate understanding by not being able to te the solution.	Examination by being able to identify the app null presenting correct logical re with some innovative approache being able to identify the app inor inadequacies in arguments omputational errors. as by being able to correctly identify app y analysing problems with poor to identify appropriate theorems Weighting in final course grade (%)	Peady enrolled in these ready enrolled in these propriate theorems and their asoning and argumentation s to solving problems. opriate theorems and their identifying the appropriate entify appropriate theorems, with poor argument and propriate theorems, but with argument or presentation or or their applications, or not No. of Hours 36 12 100 Assessment Methods to CLO Mapping
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities	2, or equiv Not for stu courses. For BSc(A Y 1st : A B C D Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Examinati Test George B edition)	ralent; and Idents who have Idents who have sem Offer in 20 Demonstrate an ex- applications through and being able to ca Demonstrate a good applications through theorems or their ap Demonstrate an ac- but with some ina- presentation or a nu Demonstrate some substantial inadequ with substantial com Demonstrate poor a being able to compl ased course Self study	passed MATH1013 or (MATH1851 and s only. http://www.standing.org/stand	Examination Examination by being able to identify the app ntly presenting correct logical re- with some innovative approache being able to identify the appri- inor inadequacies in arguments as by being able to correctly identify app y analysing problems with poor to identify appropriate theorems Weighting in final course grade (%) 50 50 lass: Thomas' Calculus (No. of Hours No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2,3,4,5,6

	wathema	atical methods for a	ctuarial science II (6 credits)	Academic Year	r 2016
Offering Department	Mathemati	CS		Quota	
Course Co-ordinator	Dr J T Cha	n, Mathematics (jtchan	@hku.hk)		
Teachers Involved	Dr J T Cha	in, Mathematics			
Course Objectives	solid backs on multiva	ground of calculus of on	two mathematics courses designed the and several variables and an intro ar algebra. It aims at students with s.	duction to linear algebra.	The course focuse
Course Contents & Topics	 Eigenvali Quadratio Vector sp Functions Gradients Taylor ap Maxima a 	systems of linear equa ues and eigenvectors, d c functions and their sta vaces and subspaces. s of several variables; p s and directional derivat proximation, Newton's r and minima; Lagrange n nd triple integrals, areas	iagonalization of matrices. ndard forms. artial differentiation. ives. method. nultipliers.		
Course Learning	On succes	sful completion of this c	ourse, students should be able to:		
Outcomes	de an	terminants, systems of d dimension, and the ra		eigenvectors, diagonaliza	able matrices, basis
	the	e Hessian test for local e	e various topics in functions of seve extrema, vector-valued functions, Ja the change of variable formula		
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in M/ For BSc(A	ATH1821. ctuarSc) students only.			
Offer in 2016 - 2017	Y 2nd	sem Offer in 2017 - 2	018 : Y	Examination	Mav
	Y 2nd A B	Demonstrate an excellent u applications through correct and being able to carry out of Demonstrate a good under applications through correct	ndestanding of key concepts and ideas by b ly analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ly analysing problems, but with some minor	eing able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id	priate theorems and their pning and argumentation polving problems. riate theorems and their
Grade Descriptors	A	Demonstrate an excellent u applications through correct and being able to carry out of Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei- ty analysing problems, but with some minor is and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through incc	being able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors.	priate theorems and their poing and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems,
Grade Descriptors	A B	Demonstrate an excellent u applications through correct and being able to carry out of Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor ns and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropri inadequacies in arguments, id utational errors. y being able to correctly identifi prrectly analysing problems we able to correctly identify appropriate able to correctly identify able to cor	priate theorems and their point and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems, ith poor argument and portate theorems, but with
Grade Descriptors (A+ to F)	A B C D Fail	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s	nderstanding of key concepts and ideas by b ly analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ly analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu	briate theorems and their oning and argumentation solving problems. riate theorems and their entifying the appropriate fy appropriate theorems, ith poor argument and oriate theorems, but with ument or presentation or
Grade Descriptors (A+ to F) Course Type	A B C D Fail Lecture-ba	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their applicatior Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution.	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu	briate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems, ith poor argument and briate theorems, but with ument or presentation of their applications, or not
Grade Descriptors (A+ to F) Course Type Course Teaching	A B C D Fail Lecture-ba	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their applicatior Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course	nderstanding of key concepts and ideas by b ly analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ly analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu	viriate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and priate theorems, but with ument or presentation of their applications, or no No. of Hours
Grade Descriptors (A+ to F) Course Type Course Teaching	A B C D Fail Lecture-ba Activities Lectures	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their applicatior Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution.	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu	viriate theorems and their oning and argumentation o solving problems. inate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and oriate theorems, but with ument or presentation o their applications, or no No. of Hours 36
Grade Descriptors (A+ to F) Course Type Course Teaching	A B C D Fail Lecture-ba Activities Lectures Tutorials	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution.	being able to identify the approp presenting correct logical reaso some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu	viriate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and oriate theorems, but with ument or presentation o their applications, or no No. of Hours 36 12
Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities	A B C D Fail Lecture-ba Activities Lectures Tutorials Reading /	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor or s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution. Details	being able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify rerectly analysing problems w able to correctly identify appropr alysing problems with poor argu- lentify appropriate theorems or	viriate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and oriate theorems, but with ument or presentation o their applications, or no No. of Hours 36 12 100
Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities Assessment Methods	A B C D Fail Lecture-ba Activities Lectures Tutorials Reading / Methods	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course Self study	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution.	being able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu lentify appropriate theorems or Weighting in final course grade (%)	briate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and briate theorems, but with ument or presentation of their applications, or no No. of Hours 36 12 100 Assessment Methods to CLO Mapping
Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities Assessment Methods	A B C D Fail Lecture-ba Activities Lectures Tutorials Reading /	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course Self study	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor or s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution. Details	weing able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prrectly analysing problems w able to correctly identify approp alysing problems with poor argu- lentify appropriate theorems or Weighting in final course grade (%) 50	viriate theorems and their oning and argumentation osolving problems. riate theorems and their entifying the appropriate fy appropriate theorems ith poor argument and oriate theorems, but with ument or presentation of their applications, or no No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2
Grade Descriptors	A B C D Fail Lecture-ba Activities Lectures Tutorials Reading / Methods	Demonstrate an excellent u applications through correct and being able to carry out o Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course Self study	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bei ty analysing problems, but with some minor or s and presentation or with some minor comp understanding of key concepts and ideas b es in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being a applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution. Details	being able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. y being able to correctly identify prectly analysing problems w able to correctly identify approp alysing problems with poor argu lentify appropriate theorems or Weighting in final course grade (%)	briate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems, ith poor argument and briate theorems, but with ument or presentation or their applications, or not No. of Hours 36 12 100 Assessment Methods to CLO Mapping
Grade Descriptors (A+ to F) Course Type Course Teaching & Learning Activities Assessment Methods	A B C D Fail Lecture-ba Activities Lectures Tutorials Reading / Methods Examinati Test George B. edition)	Demonstrate an excellent u applications through correct and being able to carry out of Demonstrate a good under applications through correct theorems or their application Demonstrate an acceptable but with some inadequaci presentation or a number of Demonstrate some underst substantial inadequacies in with substantial computation Demonstrate poor and inad being able to complete the s sed course Self study on	nderstanding of key concepts and ideas by b ty analysing problems, clearly and elegantly computations carefully and correctly, and with standing of key concepts and ideas by bein understanding of key concepts and ideas be s in applying the theorems through inco- minor computational errors. anding of key concepts and ideas by being applying the theorems through incorrectly an al errors. equate understanding by not being able to ic solution. Details Details	being able to identify the approp presenting correct logical reasc some innovative approaches to ng able to identify the appropr inadequacies in arguments, id utational errors. Justical bele to correctly identify prectly analysing problems w able to correctly identify appropr alysing problems with poor argu- lentify appropriate theorems or Weighting in final course grade (%) 50 50 50 50 50 51 50	viriate theorems and their oning and argumentation o solving problems. riate theorems and their entifying the appropriate fy appropriate theorems, with poor argument and oriate theorems, but with ument or presentation of their applications, or not No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2 CLO 1,2

STAT2901	Probabil credits)	ity and statistics:	foundations of actuarial scienc	e (6 Academic Year	2016		
Offering Department	Statistics &	& Actuarial Science		Quota			
Course Co-ordinator	Prof J J F	Yao, Statistics & Actu	uarial Science (jeffyao@hku.hk)				
Feachers Involved	Prof J J F	Yao, Statistics & Actu	uarial Science				
Course Objectives	quantitativ	ely assessing risk. Ap	to develop knowledge of the fundam oplications of these tools to actuarial sci of probability topics and the supporting	ence problems will be em			
Course Contents & Topics	 Basic ele Mutually Addition Independe Combina Combina Conditior Bayes Th Random Univaria uniform, ele distributior Probabili Cumulati Mode, m Variance Central L 	ate probability distrib exponential, chi-squa by functions and prob- ve distribution functio edian, percentiles and and measures of dis imit Theorem	es pectations probability utions (including binomial, negative bir re, beta, Pareto, lognormal, gamma, ability density functions ins d moments persion				
		•	troduction of estimation				
Course Learning		•	s course, students should be able to:				
Outcomes			ematical theory underlying the modern p				
	CLO 2	develop skills in prob	abilistic analysis for problems involving	randomness			
	CLO 3	apply techniques in p	robability and statistics to solve actuaria	Il science problems			
Pre-requisites	Pass in M	ATH1821 [for BSc(Ac	tuarSc) students] or already enrolled in	this course. or			
and Co-requisites and Impermissible combinations)	Pass in M	ATH1013 or already e udents who have p	enrolled in this course [for students outs assed or enrolled in any of these co	ide the BSc(ActuarSc) pr			
Offer in 2016 - 2017	Y 2nd	sem Offer in 2017	- 2018 : Y	Examination	May		
Grade Descriptors (A+ to F)	A	learning outcomes. Show	nastery at an advanced level of extensive know v strong analytical and critical abilities and logical wide range of complex, familiar and unfamiliar	thinking, with evidence of origin	al thought, and ability		
	В	learning outcomes. Show	command of a broad range of knowledge and s v evidence of analytical and critical abilities and lo ations. Apply effective organizational and presenta	gical thinking, and ability to app			
	С	outcomes. Show eviden	ut incomplete command of knowledge and skill ce of some analytical and critical abilities and lo moderately effective organizational and presental	gical thinking, and ability to ap			
	D						
.	Fail	of analytical and critical a Organization and presen	evidence of command of knowledge and skills rea abilities, logical and coherent thinking. Show very tational skills are minimally effective or ineffective	little or no ability to apply knowl			
Course Type		ased course	D. (. 1)	1			
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials	0 16 1	tutorials/example classes		12		
		Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mappin		
	Assignme		Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3		
	Examinati		One 2-hour written examination	75	CLO 1,2,3		
Required/recommended eading and online materials	2004, 7th M. A. Bea (Brooks/C S. Ghahra M. Hasset S.M. Ross	edition) n: Probability: The S ole, Thomas Learning mani: Fundamentals t & D. Stewart: Proba : A First Course in Pr	of Probability, with Stochastic Processe bility for Risk Management (2006, 2nd e obability (2005, 7th edition)	to Investments, Insuranc s (2005, 3rd edition) edition)	e, and Engineeri		
	D. Wacker	ly, W. Mendenhall III	& R. Scheaffer: Mathematical Statistics	with Applications (2008,	7th edition)		

STAT2902	Financial mathematics (6 credits)	Academic Year	2016
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 development of basic actuarial techniques. Practical applications of these conc		
Course Contents & Topics	Key topics include: measurement of interest, annuities certain; discounter amortization schedules and sinking funds; bonds and related securities; prace mortgage and short sales; stochastic approaches to interest; and key terms curves, spot rates, forward rates, duration, convexity, and immunization.	tical applications s	such as real estate

Course Learning	On succe	ssful completion	of this course, students should be able to:				
Outcomes			damental concepts of financial mathematics				
	CLO 2 learn standard actuarial notations for a variety of annuities						
			ed cashflow analysis using basic annuities				
		earn the operation hort sales, and so	ns of some commonly-encountered financi on	al instruments such as	bonds, mortgages		
	CLO 5 q	uote interest in va	rious modes and determine interest rate bas	sed on a series of financ	ial transactions		
			l of the Society of Actuaries				
Pre-requisites (and Co-requisites and Impermissible combinations)			ady enrolled in this course; and passed in STAT3615, or already enrolled in	this course.			
Offer in 2016 - 2017	Y 2n	d sem Offer in 2	017 - 2018 : Y	Examination	May		
Grade Descriptors (A+ to F)	A	learning outcomes. apply knowledge t presentational skills		thinking, with evidence of orig situations. Apply highly effe	inal thought, and ability t active organizational an		
	В	learning outcomes.	antial command of a broad range of knowledge and s Show evidence of analytical and critical abilities and lo ar situations. Apply effective organizational and presenta	gical thinking, and ability to a			
	С	outcomes. Show e	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	Show evidence of	al but limited command of knowledge and skills require some coherent and logical thinking, but with limited ana problems. Apply limited or barely effective organization	alytical and critical abilities. Sh			
	Fail	of analytical and cr	or no evidence of command of knowledge and skills red itical abilities, logical and coherent thinking. Show very resentational skills are minimally effective or ineffective	little or no ability to apply know			
Course Type	Lecture-b	ased course	· · · · · · · · · · · · · · · · · · ·				
Course Teaching	Activitie	S	Details		No. of Hours		
& Learning Activities	Lectures						
	Tutorials		tutorials/example classes		12		
	Reading	/ Self study			100		
Assessment Methods and Weighting	Methods	5	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignm	ents	Coursework (assignments, tutorials, and class test(s))	25	CLO 1,2,3,4,5,6		
	Examina	tion	One 3-hour written examination	75	CLO 1,2,3,4,5,6		
Required/recommended reading and online materials		an, S. A.: Mathen	of Interest (Irwin: Illinois, 2008, 3rd edition) natics of Investment and Credit (ACTEX Pu	ublications - Mad River	Books: Connecticu		
Course Website	moodle.h	, ku hk					

STAT3602	Statist	stical in	nference (6	credits)				Academic Year	2016
Offering Department	Statistic	cs & Ac	tuarial Scienc	ce ,				Quota	
Course Co-ordinator	Prof S N	M S Le	e, Statistics &	Actuarial S	cience <i>(smsle</i>	ee@hku.hk)			
Teachers Involved	Prof S M	M S Le	e, Statistics &	Actuarial S	Science				
Course Objectives	mathem statistic	matically cal meth	v-oriented ap lodologies ar	proach, the	e course prov rlying concep	rides a solid	and rigorou It is suitabl	ion and hypothes s treatment of in le in particular for	ferential problem
Course Contents & Topics	2. Decis 3. Estin UMVU e 4. Hypo	ision the mation estimat othesis	ory: loss fund theory: expo ors; informati testing: unifo	ction; risk; d nential fam on inequalit rmly most p	ilies; likelihoo ty; large-samp powerful test;	admissibility; n od; sufficiency le theory of m	; minimal s aximum like elihood ratio	nbiasedness; Bay ufficiency; ancilla lihood estimation. ; unbiasedness; L od ratio.	rity; completenes
Course Learning Outcomes	On succ CLO 1 CLO 2	form	a panoramic	view of cla	ssical develop	ould be able to ments in mati	nematical sta	atistics	
	CLO 3	3.	•	•	essentials of ture research	statistical infe		lated areas	
Pre-requisites (and Co-requisites and Impermissible combinations)	CLO 3	build	•	dation for fu				lated areas	
(and Co-requisites and Impermissible	CLO 3 Pass in	build	a solid found 2602 or STAT	dation for fu	ture research			lated areas	Dec
(and Co-requisites and Impermissible combinations)	CLO 3 Pass in	build STAT2	a solid found 602 or STAT Offer in 20 nonstrate thorou ning outcomes.	dation for fu 3902 17 - 2018 : igh mastery a Show strong an o a wide rang	ture research Y t an advanced le nalytical and critic	studies in star	istics and re knowledge an gical thinking, v		attaining all the cour al thought, and ability
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 3 Pass in Y 1	1st sem Der lear app pre- lear lear	Offer in 20 offer in 20 nonstrate thoroun ing outcomes. S by knowledge to senational skills, nonstrate substa ning outcomes. S	dation for fu 3902 17 - 2018 : igh mastery a Show strong an a wide rang a wide rang show evidence	Y t an advanced le nalytical and critic ge of complex, f d of a broad rang e of analytical and	studies in star	knowledge an gical thinking, v miliar situations and skills requ	Examination d skills required for a vith evidence of origins s. Apply highly effect irred for attaining at le sing, and ability to appl	attaining all the cour al thought, and ability ive organizational a ast most of the cour
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 3 Pass in Y 1 A	1st sem Der lear and Der lear and Der out	Offer in 20 Offer in 20 nonstrate thorouning outcomes. It knowledge to sentational skills. some unfamiliar nonstrate substa- ning outcomes. some unfamiliar nonstrate gener- nomes. Show ev	dation for fu 3902 17 - 2018 : igh mastery a Show strong an a wide rang a wide rang natial commanu Show evidence situations. Ap al but incomp al but incomp	Y t an advanced le nalytical and criti je of complex, f d of a broad ran- e of analytical and ply effective orga lete command co e analytical and	studies in star	knowledge an gical thinking, v miliar situations and skills requ nd logical think sentational ski ind logical think	Examination d skills required for a vith evidence of origins s. Apply highly effect ired for attaining at le king, and ability to app lls. d for attaining most king, and ability to app	attaining all the cour al thought, and ability ive organizational a ast most of the cour ly knowledge to famil of the course learni
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 3 Pass in Y 1 A B	1st sem Der lear and Der lear and Der lear and Der sho	Offer in 20 Offer in 20 nonstrate thorouning outcomes. S by knowledge to sentational skills, nonstrate substa- ning outcomes. S some unfamiliar nonstrate gener, oomes. Show ev iliar situations. A nonstrate partial w evidence of ss	dation for fu 3902 17 - 2018 : 19 mastery a Show strong an a wide rang a wide rang a wide rang a wide rang a wide rang a but incomp idence of som pply moderate but limited co ome coherent	Y t an advanced le nalytical and critic je of complex, f d of a broad ran- e of analytical and ply effective organ lete command c e analytical and ly effective organ mmand of knowl and logical thinki	studies in star evel of extensive an abilities and lo amiliar and unfa ge of knowledge d critical abilities a nizational and pre d knowledge and critical abilities a izational and pre edge and skills ra og, but with limite	knowledge an gical thinking, v miliar situations and skills requind logical think ssentational skills expuired for atta equired for atta d analytical and	Examination d skills required for a vith evidence of origins s. Apply highly effect ired for attaining at le king, and ability to app lls. d for attaining most king, and ability to app	attaining all the cour al thought, and ability ive organizational a ast most of the cour y knowledge to famil of the course learni ply knowledge to more rse learning outcome
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 3 Pass in Y 1 A B C	1st sem Der lear app pre: Der lear and Der out fam Der Sho kno of a	Offer in 20 Offer in 20 nonstrate thorou ning outcomes. I y knowledge to sentational skills. nonstrate substa- ning outcomes. I some unfamiliar onstrate gener. comes. Show ev iliar situations. A monstrate gener. comes. Show ev iliar situations. A weidence of si wledge to solve p nonstrate little or nonstrate little or nonstrate little or nonstrate little or nonstrate little or nonstrate little or	dation for fu 3902 17 - 2018 : 19 mastery a Show strong an a wide rang a wide rang a wide rang a wide rang a wide rang a wide rang a wide rang ratial commanus Show evidence of situations. Ap idence of som pply moderate but limited co but limited co but limited co pro levidence (ical abilities, lo	Y t an advanced le nalytical and critic je of complex, f d of a broad rame of analytical and ply effective organ bete command of he analytical and dy effective organ mmand of knowl and logical thinki ly limited or barele of command of knowl and logical thinki hinki dy law command of knowl and command of knowl hinki dy law command of knowl hinki	studies in star evel of extensive cal abilities and lo amiliar and unfa ge of knowledge d critical abilities a rizational and pre- rif knowledge and critical abilities a izational and pre- edge and skills re ng, but with limite y effective organi owledge and ski	knowledge an gical thinking, v miliar situations and skills required ind logical think esentational skills esentational skills d analytical and zquired for atta d analytical and reational and pre lls required for	Examination d skills required for a vith evidence of origins s. Apply highly effect ired for attaining at le king, and ability to app lls. d for attaining most king, and ability to ap s. ining some of the cou d critical abilities. Shoo	attaining all the cour al thought, and ability ive organizational a ast most of the cour y knowledge to famil of the course learni ply knowledge to more rse learning outcome v limited ability to appearing outcomes. La

Course Teaching	Activities Details			No. of Hours				
& Learning Activities	Lectures		36					
	Tutorials			12				
	Reading / Self study			100				
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping				
	Assignments	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3				
	Examination	One 2-hour written examination	75	CLO 1,2,3				
Required/recommended reading and online materials	Bickel, P. J. & Doksum, K. A.: M Upper Saddle River, N.J., 2001) Freund, J. E.: Mathematical Statis Hogg, R. V. & Craig, A. T.: Introdu	 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). 						
Course Website	moodle.hku.hk		ige entrenenty i receir eta					

STAT3612 Data mining (6 credits) Academic Year 2016 Offering Department Statistics & Actuarial Science Quota 50 Dr G C S Lui, Statistics & Actuarial Science (csglui@hku.hk) **Course Co-ordinator** Dr A J Zhang, Statistics & Actuarial Science **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** Data pre-processing, classification and regression trees, credit scoring, kNN classifier, cluster analysis and neural & Topics networks. Course Learning On successful completion of this course, students should be able to: Outcomes CLO 1 implement data mining process summarized in the acronym SEMMA which stands for sampling, exploring, modifying, modeling, and assessing data CLO 2 understand and apply a wide range of data mining techniques, and recognize their characteristics, strengths and weaknesses CLO 3 be proficient with the leading data mining software---SAS Enterprise Miner CLO 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 CLO 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 Pass in STAT2602 or (STAT1603 and any University level 2 course) or STAT3902 (and Co-requisites Co-requisites: STAT3600 and Impermissible combinations) Offer in 2016 - 2017 1st sem 2nd sem Offer in 2017 - 2018 : Y No Exam Examination Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course Grade Descriptors Α 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 (A+ to F) presentational skills. Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course в 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. 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 С familiar situations. Apply moderately effective organizational and presentational skills. 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 D knowledge to solve problems. Apply limited or barely effective organizational and presentational skills. 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. Fail Course Type Lecture-based course **Course Teaching** Activities Details No. of Hours & Learning Activities Lectures 36 12 Tutorials Reading / Self study 100 Assessment Methods Methods Details Assessment Weighting in final and Weighting course grade (%) Methods to CLO Mapping Assignments 30 CLO 1,2,3,5 CLO 1,2,3,4,5 Project reports 30 40 CLO 2,3 Test Required/recommended Tan, P. N., Steinback, M. and Kumar, V.: Introduction to Data Mining (Addison Wesley, 2014, 3rd edition) T. Hastie, R. Tibshirani, & J. Friedeman: The Elements of Statistical Learning: Data Mining, Inference, and reading and online materials Prediction (Springer, New York, 2008, 2nd edition) M. Kantardzic: Data Mining: Concepts, Models, Methods, and Algorithms (Wiley, 2003) A. Webb: Statistical Pattern Recognition (Wiley, 2011, 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)

			ing: Concepts and Techniques (Morgan wledge in Data: An Introduction to Data				
Course Website		oodle.hku.hk					
Additional Course Information	Other refe Relations	Other references: M. J. A. Berry & G. S. Linoff: Data Mining Techniques: For Marketing, Sales and Custo Relationship Management (Wiley, 2011, 3rd edition) Larose, D. T.: Data Mining: Methods and Models (Wiley, 2005)					
STAT3616	Advance	ed SAS programn	ning (6 credits)	Academic Year	2016		
Offering Department		& Actuarial Science		Quota	50		
Course Co-ordinator			arial Science (kaing@hku.hk)	44014			
Teachers Involved		Ng, Statistics & Actua					
Course Objectives	programm	ning for automation of	students, who have taken STAT2603 procedures and data processing in solv	ving complex problems m	ore efficiently.		
Course Contents & Topics		, ,	parts. Macro programming. Advance k-up techniques, modifying transaction				
Course Learning		ssful completion of thi	is course, students should be able to:				
Outcomes			m of SAS and basic programming				
			for parallel processing to aid automatic		•		
			et without printing to OUTPUT windows develop customized and automated app		ion		
			rogramming statements and techniques		ns		
Pre-requisites		TAT2601 or STAT290	o o i		110		
(and Co-requisites and Impermissible combinations)			ended to take STAT2603 prior to taking	this course.)			
Offer in 2016 - 2017	Y 2nd	d sem Offer in 2017	- 2018 : Y	Examination	May		
Grade Descriptors (A+ to F)	A	A Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the cour learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills.					
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the cours learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to famili 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 le outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar situations. Apply moderately effective organizational and presentational skills.					
	D	urse learning outcome ow limited ability to app					
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. L of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve proble Organization and presentational skills are minimally effective or ineffective.						
Course Type	1	ased course					
Course Teaching	Activities	S	Details		No. of Hours		
& Learning Activities	Lectures Tutorials				36 12		
		/ Self study			100		
Assessment Methods and Weighting	Methods	· · · · · · · · · · · · · · · · · · ·	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	50	CLO 1,2,3,4,5		
	Examination		One 2-hour written examination	50	CLO 1,2,3,4,5		
Required/recommended reading and online materials	SAS Certification Prep Guide: A		Advanced Programming for SAS 9, Thir nplete Guide to the SAS Macro Lang		North Carolina: SA		
Course Website	moodle.hl	ku.hk					
STAT2001	l ife eer	tingonoico (6 cros	dita)	Academic Year	2016		
STAT3901		tingencies (6 crea & Actuarial Science	anoj		r 2016		
Offering Department Course Co-ordinator			uarial Science (kcyuen@hku.hk)	Quota			
Teachers Involved		Yuen, Statistics & Acti					
Course Objectives		major objectives of this course are to integrate life contingencies into a full probabilistic framework. The time					

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.				
Course Learning	On successful completion of this course, students should be able to:				
Outcomes	CLO 1 calculate the expected values, variances, probabilities, and percentiles for survival-time random variables				
	CLO 2 define the continuous survival-time random variable that arises from the discrete survival-time random variable using some assumptions for fractional ages				
	CLO 3 define present-value-of-benefit random variables defined on survival-time random variables				
	CLO 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				
	CLO 5 calculate benefit premiums for life insurances and annuities				
-					

 Pre-requisites
 (Pass in STAT2602 and STAT3615) or

 (and Co-requisites
 (Pass in STAT2902 and (Pass in STAT3902 or already enrolled in this course)) or

 (Pass in STAT2602 and STAT2902)

and Impermissible combinations)							
Offer in 2016 - 2017	Y 1st s	sem Offer in 2017 - 20	18 : Y	Examination	Dec		
Grade Descriptors (A+ to F)	A	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original though apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective orga presentational skills.					
	В	learning outcomes. Show ev and some unfamiliar situation	nmand of a broad range of knowledge and idence of analytical and critical abilities and I ns. Apply effective organizational and presen	ogical thinking, and ability to a tational skills.	oply knowledge to familiar		
	С	outcomes. Show evidence of	ncomplete command of knowledge and ski of some analytical and critical abilities and I derately effective organizational and presenta	ogical thinking, and ability to			
	D	Show evidence of some coh	ted command of knowledge and skills requir erent and logical thinking, but with limited an s. Apply limited or barely effective organizatio	alytical and critical abilities. Sh			
	Fail	of analytical and critical abilit	ence of command of knowledge and skills re ties, logical and coherent thinking. Show very onal skills are minimally effective or ineffective	little or no ability to apply know			
Course Type	Lecture-ba	sed course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignments		Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4,5		
	Examinati	on	One 3-hour written examination	75	CLO 1,2,3,4,5		
Required/recommended reading and online materials	Itasca, Illinois: The Society of Actu Dickson, C.M.D., Hardy, M.R., a		nd Waters, H.R.: Actuarial Mathem		· · · · · · · · · · · · · · · · · · ·		
	Cambridae	ge University Press, 2009)					

STAT3902	Statisti	r 2016					
Offering Department		Statistics & Actuarial Science Quota					
Course Co-ordinator	Dr J F Xu, Statistics & Actuarial Science (xujf@hku.hk)						
Teachers Involved	Dr J F Xu, 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 guantitative skills and gualitative 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	On succe	essful completion of	this course, students should be at	ole to:			
Dutcomes	CLO 1 u	nderstand the impo	rtance of sufficient statistic(s) in date interval estimation, and testing h	ata reduction and statistical inferent	ences such as poin		
			lihood estimators of parameters to		stimates		
			•				
	CLO 3 locate pivotal quantity to construct confidence intervals of parameters CLO 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	Pass in STAT2901; and Not for students who have passed in STAT2602, or already enrolled in this course; and For BSc(Actuarial Science) students only.						
(and Co-requisites and Impermissible combinations)	Not for st For BSc(udents who have pa Actuarial Science) s	tudents only.				
and Co-requisites and Impermissible combinations)	Not for st For BSc(udents who have pa	tudents only.	rolled in this course; and Examination	Dec		
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017	Not for st For BSc(udents who have pa Actuarial Science) s t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl	tudents only.	Examination sive knowledge and skills required for nd logical thinking, with evidence of origin	attaining all the course nal thought, and ability to		
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Not for st For BSc(Y 1s	t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a	Examination nsive knowledge and skills required for nd logical thinking, with evidence of origi unfamiliar situations. Apply highly effer dge and skills required for attaining at I ties and logical thinking, and ability to ap	attaining all the course nal thought, and ability to ctive organizational and least most of the course		
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Not for st For BSc(Y 1s	Actuarial Science) s t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate general outcomes. Show evic	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowle how evidence of analytical and critical abili	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effect dge and skills required for attaining at I ties and logical thinking, and ability to ap of presentational skills. and skills required for attaining most ies and logical thinking, and ability to a	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning		
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Not for st For BSc(Y 1s A B	t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate partial b Show evidence of sor	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowle how evidence of analytical and critical abili situations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abili	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to most source learning outcomes		
and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Not for st For BSc(Y 1s A B C	udents who have pa Actuarial Science) s t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliars Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate peneral outcomes. Show evic familiar situations. Ap Demonstrate pential b Show evidence of sor knowledge to solve pr Demonstrate little or of analytical and critic	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowle how evidence of analytical and critical abili isituations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abili ply moderately effective organizational aru but limited command of knowledge and sk me coherent and logical thinking, but with l	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes by limited ability to apply learning outcomes. Lack		
and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F)	Not for si For BSc(Y 1s A B C D Fail	udents who have pa Actuarial Science) s t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliars Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate peneral outcomes. Show evic familiar situations. Ap Demonstrate pential b Show evidence of sor knowledge to solve pr Demonstrate little or of analytical and critic	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowled how evidence of analytical and critical abili isituations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abiliti ply moderately effective organizational aru out limited command of knowledge and sk me coherent and logical thinking, but with I coblems. Apply limited or barely effective on no evidence of command of knowledge and a abilities, logical and coherent thinking. S	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes by limited ability to apply learning outcomes. Lack		
and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	Not for si For BSc(Y 1s A B C D Fail	t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate substan learning outcomes. Sh ow evidence of sor knowledge to solve pr Demonstrate little or of analytical and critic Organization and pres- pased course	tudents only. 7 - 2018 : Y h mastery at an advanced level of exter how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowled how evidence of analytical and critical abili isituations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abiliti ply moderately effective organizational aru out limited command of knowledge and sk me coherent and logical thinking, but with I coblems. Apply limited or barely effective on no evidence of command of knowledge and a abilities, logical and coherent thinking. S	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes by limited ability to apply learning outcomes. Lack		
and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	Not for st For BSc(Y 1s A B C D Fail Lecture-b	t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate general Show evidence of sor knowledge to solve pr Demonstrate little or of analytical and critic Organization and presonased course	tudents only. 7 - 2018 : Y h mastery at an advanced level of extern how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowled how evidence of analytical and critical abili situations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abilit ply moderately effective organizational and the coherent and logical thinking, but with l oblems. Apply limited or barely effective on a abilities, logical and coherent thinking. S sentational skills are minimally effective or a sentational skills are minimal sentational skills are minimal sentational skills are minimal sentational skills are sentational skills are minimal sentational skills are minimal sentational skills are sentational skills	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes bw limited ability to apply learning outcomes. Lack ledge to solve problems		
and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors (A+ to F) Course Type Course Type	Not for st For BSc(Y 1s A B C D Fail Lecture-t Activitie Lectures Tutorials	Actuarial Science) s t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate general outcomes. Show evic familiar situations. Ap Demonstrate partial b Show evidence of sor knowledge to solve pr Demonstrate little or r of analytical and critic Organization and pres	tudents only. 7 - 2018 : Y h mastery at an advanced level of extern how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowled how evidence of analytical and critical abili situations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abilit ply moderately effective organizational and the coherent and logical thinking, but with l oblems. Apply limited or barely effective on a abilities, logical and coherent thinking. S sentational skills are minimally effective or a sentational skills are minimal sentational skills are minimal sentational skills are minimal sentational skills are sentational skills are minimal sentational skills are minimal sentational skills are sentational skills	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes by limited ability to apply learning outcomes. Lack ledge to solve problems No. of Hours		
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Not for st For BSc(Y 1s A B C D Fail Lecture-t Activitie Lectures Tutorials	t sem Offer in 201 Demonstrate thoroug learning outcomes. Sl apply knowledge to presentational skills. Demonstrate substan learning outcomes. Sl and some unfamiliar s Demonstrate general outcomes. Show evic familiar situations. App Demonstrate general outcomes. Show evic familiar situations. App Demonstrate general Show evidence of sor knowledge to solve pr Demonstrate little or r of analytical and critic Organization and prese pased course	tudents only. 7 - 2018 : Y h mastery at an advanced level of extern how strong analytical and critical abilities a a wide range of complex, familiar and tial command of a broad range of knowled how evidence of analytical and critical abili situations. Apply effective organizational ar but incomplete command of knowledge lence of some analytical and critical abilit ply moderately effective organizational and the coherent and logical thinking, but with l oblems. Apply limited or barely effective on a abilities, logical and coherent thinking. S sentational skills are minimally effective or a sentational skills are minimal sentational skills are minimal sentational skills are minimal sentational skills are sentational skills are minimal sentational skills are minimal sentational skills are sentational skills	Examination sive knowledge and skills required for al logical thinking, with evidence of origin unfamiliar situations. Apply highly effer- dge and skills required for attaining at l ties and logical thinking, and ability to ap d presentational skills. and skills required for attaining most ies and logical thinking, and ability to a presentational skills. Ills required for attaining some of the co- mited analytical and critical abilities. She ganizational and presentational skills. d skills required for attaining the course how very little or no ability to apply know	attaining all the course nal thought, and ability to ctive organizational and least most of the course ply knowledge to familia of the course learning pply knowledge to mos nurse learning outcomes bow limited ability to apply learning outcomes. Lack ledge to solve problems No. of Hours 36		

	Assignmer	nts	Coursework tutorials, and a class		25	CLO 1,2,3,4		
	Examination		One 3-hour written		75	CLO 1,2,3,4		
Required/recommended reading and online materials	2004, 7th e	edition)	. Freund's Mathematical S & Craig A. T.: Introduction					
	Arnold S. F	J. and Marx M. L	Statistics (Prentice-Hall, 199 .: An Introduction to Mathe		s and Its Appications (F	Pearson Internation		
Course Website	moodle.hku	u.hk						
STAT3903	Stochast	ic models (6 c	radits)		Academic Yea	r 2016		
Offering Department	-	Actuarial Scienc			Quota			
Course Co-ordinator			ctuarial Science (yukchung	(@hku.hk)				
eachers Involved	Dr Y K Chu	ung, Statistics & A	ctuarial Science					
Course Objectives	This is an discussed.		se in probability modelling.	A range of imp	oortant topics in stochas	tic processes will b		
Course Contents & Topics	classification states, Pois Brownian M formula, G	on of states in a sson process, dis Motion, hitting tim aussian bridge,	neory, Conditional probabi Markov chain, calculation tribution of inter-arrival time e and maximum variable, g and stationary processes. d (if time permits).	of limiting prol and waiting time eometric Brown	babilities and mean tim ne, conditional distribution ian motion, the Black-S	e spent in transie on of the arrival tim choles option pricir		
Course Learning		•	this course, students shou	ld be able to:				
Outcomes	CLO 1 a	pply the condition	ing method to calculate the	mean and prob	ability			
			entials of Markov chains, t					
	CLO 3 u	nderstand how st	ochastic models can be ap	plied to the study	y of real-life phenomena			
Pre-requisites		AT2901; and						
and Co-requisites			assed in MATH3603, or ha					
and Impermissible combinations)		ctuarial Science)	assed in STAT3603, or hav	e already enroll	ed in this course; and			
Offer in 2016 - 2017		sem Offer in 20			Examination	May		
Grade Descriptors	A 210		ph mastery at an advanced leve	l of extensive know				
(A+ to F)	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							
			roblems. Apply limited or barely e					
	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.							
0 T	Lestine		sentational skills are minimally ef	ective or ineffective.				
Course Type		sed course	D. (. 1)			N. (11		
Course Teaching & Learning Activities	Activities		Details			No. of Hours		
x Learning Activities	Lectures Tutorials					36 12		
	Reading /	Self study				100		
Assessment Methods	Methods	Cen Study	Details		Weighting in final	Assessment		
and Weighting	motheue		Dotalio		course grade (%)	Methods to CLO Mapping		
	Assignmer	nts	Coursework tutorials, and a class	(assignments,	25	CLO 1,2,3		
	Examinatio	าท	One 3-hour written	,	75	CLO 1,2,3		
eading and		-	Probability Models (9th editi		10	010 1,2,0		
online materials								
Course Website	moodle.hki	u.nk						
STAT3904	Corporat	e finance for a	ctuarial science (6 cre	dits)	Academic Yea	r 2016		
Offering Department		Actuarial Scienc			Quota			
Course Co-ordinator			uarial Science (jkwoo@hku	.hk)				
Feachers Involved		o, Statistics & Act	V					
Course Objectives	The object	ive of this course students with a	actuarial science students t is to introduce students to systematic framework with	the fundamenta	I principles of corporate	finance. The cours		
Course Contents & Topics	The first pa covered in	art of the course STAT2902 and	will give an introduction to STAT3615. These include ruments and dividends der	: financial mark	tets and companies; pr	esent value and n		
		resent value, financial instruments and dividends derivatives market, no-arbitrage pricing theory, binomial r nd Black-Scholes option pricing formula. The main part of the course will focus on some important top prporate finance including: capital structure and dividend policy, financial leverage and firm value, m ficiency, risk and return, investment decision using Markowitz mean variance analysis, CAPM, long						

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. On successful completion of this course, students should be able to:

Outcomes			ors to be considered by a company when or mpact of financial leverage and long/short	5 1				
Cutoonico	policy, and also the impact of financial leverage and long/short term financing policies on capital structure CLO 2 calculate the value of bonds and stocks							
	CLO 3 assess financial performance using various measures							
		CLO 4 understand the mean-variance portfolio theory						
Pre-requisites and Co-requisites and Impermissible combinations)		(Pass in ACCT1101 and STAT2902) or (Pass in STAT3610 and STAT3615)]; and Not for students who have passed in FINA1310, or have already enrolled in this course.						
Offer in 2016 - 2017	Y 2nc	d sem Offer in 20	17 - 2018 : Y	Examination	May			
Grade Descriptors	Α	Demonstrate thoroug	gh mastery at an advanced level of extensive know	wledge and skills required for	r attaining all the cours			
(A+ to F)	В	apply knowledge to presentational skills.	how strong analytical and critical abilities and logical a wide range of complex, familiar and unfamiliar ntial command of a broad range of knowledge and	situations. Apply highly effe	ective organizational a			
	в С	learning outcomes. S and some unfamiliar Demonstrate genera	who evidence of analytical and critical abilities and lo situations. Apply effective organizational and present I but incomplete command of knowledge and skil dence of some analytical and critical abilities and lo	ogical thinking, and ability to ap ational skills. Is required for attaining mos	pply knowledge to famili t of the course learning			
	D	Demonstrate partial I Show evidence of so	ply moderately effective organizational and presenta but limited command of knowledge and skills require me coherent and logical thinking, but with limited ana roblems. Apply limited or barely effective organization	ed for attaining some of the co alytical and critical abilities. Sh				
	Fail	Demonstrate little or of analytical and critic	no evidence of command of knowledge and skills re- cal abilities, logical and coherent thinking. Show very sentational skills are minimally effective or ineffective	quired for attaining the course little or no ability to apply know				
Course Type	-	ased course						
Course Teaching & Learning Activities	Activities Lectures	S	Details		No. of Hours			
	Tutorials				36 12			
		/ Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mappin			
	Assignme	ents	Coursework (assignments,	25	CLO 1,2,3,4			
	Examinat	tion	tutorials, and a class test) One 3-hour written examination	75	CLO 1,2,3,4			
Required/recommended			nd Allen, F.: Principles of Corporate Finance	-	0101,2,3,4			
reading and online materials	Ross, S. A		W. and Jaffe, J.: Corporate Finance (2005,					
Course Website	moodle.hk							
			al derivatives (6 credits)	Academic Yea				
Offering Department	Statistics	& Actuarial Science	e	Academic Yea Quota	r 2016 			
Offering Department Course Co-ordinator	Statistics Dr E C K	& Actuarial Science Cheung, Statistics	e & Actuarial Science (eckc@hku.hk)					
Offering Department Course Co-ordinator Teachers Involved	Statistics Dr E C K Dr E C K	& Actuarial Science Cheung, Statistics Cheung, Statistics	e	Quota				
Offering Department Course Co-ordinator Feachers Involved	Statistics Dr E C K Dr E C K This cours	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing	e & Actuarial Science <i>(eckc@hku.hk)</i> & Actuarial Science	Quota				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents	Statistics Dr E C K (Dr E C K (This cours on basic to Derivative	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging es; short-selling; fo	e & Actuarial Science <i>(eckc@hku.hk)</i> & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag prward contracts; call options; put optio	Quota ncepts of financial deriva le. ns; equity-linked CD; s	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics	Statistics Dr E C K (Dr E C K (This cours on basic t Derivative hedging; f	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging es; short-selling; for financial forwards a	e & Actuarial Science <i>(eckc@hku.hk)</i> & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag prward contracts; call options; put optio and futures; commodity swaps; interest rate	Quota ncepts of financial deriva le. ns; equity-linked CD; s	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning	Statistics of Dr E C K O Dr E C K O This cours on basic to Derivative hedging; f On succes CLO 1 de CLO 2 ev	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providin- trading and hedging æ; short-selling; for financial forwards a ssful completion of efine and recognize valuate the payoff a	e & Actuarial Science <i>(eckc@hku.hk)</i> & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag prward contracts; call options; put optio	Quota ncepts of financial deriva le. ns; equity-linked CD; s e swaps; put-call parity. n derivatives markets uding forwards, futures,	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes Pre-requisites (and Co-requisites	Statistics of Dr E C K (Dr E C K (This course on basic tr Derivative hedging; f On succes CLO 1 de CLO 2 ev CLO 3 ex Pass in S Not for stu	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging es; short-selling; for financial forwards a ssful completion of efine and recognize valuate the payoff a xplain how derivativ TAT2902; and udents who have payof	e & Actuarial Science (eckc@hku.hk) & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag orward contracts; call options; put optio and futures; commodity swaps; interest rate this course, students should be able to: a the definitions of terms commonly used ir and profit of basic derivative contracts, inclu- ve securities can be used as tools to mana assed in STAT3618, or have already enrol	Quota ncepts of financial deriva je. ns; equity-linked CD; s a swaps; put-call parity. n derivatives markets uding forwards, futures, ge financial risk led in this course; and	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes Pre-requisites (and Co-requisites and Impermissible	Statistics of Dr E C K (Dr E C K (This cours on basic tr Derivative hedging; f On succes CLO 1 de CLO 2 ev CLO 3 ex Pass in S ² Not for stu	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging se; short-selling; fo financial forwards a ssful completion of efine and recognize valuate the payoff a xplain how derivativ TAT2902; and udents who have pu	e & Actuarial Science (eckc@hku.hk) & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag orward contracts; call options; put optio and futures; commodity swaps; interest rate this course, students should be able to: the the definitions of terms commonly used ir and profit of basic derivative contracts, inclive securities can be used as tools to mana assed in STAT3618, or have already enroll assed in FINA2322, or have already enroll	Quota ncepts of financial deriva je. ns; equity-linked CD; s a swaps; put-call parity. n derivatives markets uding forwards, futures, ge financial risk led in this course; and	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes Pre-requisites (and Co-requisites and Impermissible combinations)	Statistics of Dr E C K (Dr E C K (This cours on basic to Derivative hedging; f On succes CLO 1 de CLO 2 ex CLO 3 ex Pass in S [*] Not for stu Not for stu For BSc(A	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging se; short-selling; fo financial forwards a ssful completion of efine and recognize valuate the payoff a xplain how derivativ TAT2902; and udents who have pa Actuarial Science) s	e & Actuarial Science (eckc@hku.hk) & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag orward contracts; call options; put optio and futures; commodity swaps; interest rate this course, students should be able to: the definitions of terms commonly used ir and profit of basic derivative contracts, inclu- ve securities can be used as tools to mana assed in STAT3618, or have already enroll assed in FINA2322, or have already enroll- students only.	Quota ncepts of financial deriva je. ns; equity-linked CD; s a swaps; put-call parity. n derivatives markets uding forwards, futures, ge financial risk led in this course; and	tives. Emphases a			
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes Pre-requisites (and Co-requisites and Impermissible combinations) Offer in 2016 - 2017	Statistics of Dr E C K (Dr E C K (This cours on basic to Derivative hedging; f On succes CLO 1 de CLO 2 ex CLO 3 ex Pass in S [*] Not for stu Not for stu For BSc(A	& Actuarial Science Cheung, Statistics Cheung, Statistics se aims at providing rading and hedging es; short-selling; fo financial forwards a ssful completion of efine and recognize valuate the payoff a xplain how derivation TAT2902; and udents who have payof Actuarial Science) so sem Offer in 201 Demonstrate thoroug learning outcomes. So apply knowledge to	e & Actuarial Science (eckc@hku.hk) & Actuarial Science g an understanding of the fundamental cor g strategies, and the concept of no-arbitrag orward contracts; call options; put optio and futures; commodity swaps; interest rate this course, students should be able to: the definitions of terms commonly used ir and profit of basic derivative contracts, inclu- ve securities can be used as tools to mana assed in STAT3618, or have already enroll assed in FINA2322, or have already enroll- students only.	Quota Comparison of financial derivates Comparison of financial derivates Comparison of financial derivates Comparison of the comparison o	tives. Emphases a spreads and colla options, and swaps Dec r attaining all the cour nal thought, and ability			
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		Coursework (assignments, tutorials, and a class test)		
	Examination	One 2-hour written examination	75	CLO 1,2,3
Required/recommended reading and online materials	McDonald, R. L.: Derivatives Mark	ets (Addison Wesley, 2006, 2nd edi	ition), Chapters 1-5, 8.	
Course Website	moodle.hku.hk			

stochastic processes to insurance problems such as the premium calculation, ruin probability, etc. Course Contents A Topics Severity models; frequency models; collective risk models; coverage modifications; ruin theory; risk r simulation. Course Learning Outcomes On successful completion of this course, students should be able to: CLO 1 understand the individual risk model and the collective risk model, evaluate the distribution and ex of the total claim amounts using the information of amounts made in previous years CLO 3 calculate some commonly used risk measures and explain their use and limitation CLO 4 apply simulation methods within the context of actuarial models Pre-requisites and Impermissible combinations) Y 2nd sem Offer in 2017 - 2018 : Y Examination May Grade Descriptors (A+ to F) Y 2nd sem Offer in 2017 - 2018 : Y Examination May B Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining at least most of learning outcomes. Show widence of analytical and critical abilities and logical thinking, and ability to apply knowledg and some unfamiliar situations. Apply effective organizational and presentational skills. D Demonstrate parenal but incomplete command of a knowledge and skills required for attaining most of the cour outcomes. Show widence of some analytical and critical abilities and logical thinking, and ability to apply knowledg and some unfamiliar situations. Apply limited or brand range of knowledge and skills required for attaining some of the cours outcomes	STAT3906	Risk the	ory I (6 credits)		Academic Year	2016		
Teachers Involved Dr K C Cheung, Statistics & Actuarial Science Course Objectives Risk theory is no ef ofte main topics in actuarial science. Risk theory is the applications of statistical mathematical statistics and the premium calculation, ruin probability, etc. Severity models; frequency models; collective risk models; overage modifications; ruin theory; risk r & Topics Simulation. On successful completion of this course, students should be able to: Outcomes CLO 1 understand the individual risk model and the collective risk model, evaluate the distribution and ex of the total claim amounts CLO 2 estimate the premium of a policyholder and the total claim amounts using the information of amounts made in previous years CLO 3 calculate some commonly used risk measures and explain their use and limitation CLO 4 apply simulation methods within the context of actuarial models Pre-requisites and fumpermissible combinations) Offer in 2016 - 2017 Y And Seemantee the premium mathematice for attaining at least most of the course representational skills. B Demonstrate storage analytical and critical abilities and logical thinking, and ability to apply knowledge to a wide range of knowledge and skills required for attaining at least most of the courter the state state. CLO 4 in phy individence original throught a apply moderably effective organization and presentational skills. C Demonstrate structure and a buin decipation individe and critical abilities	Offering Department	Statistics &						
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Dutcomes CLO 1 understand the individual risk model and the collective risk model, evaluate the distribution and exion of the total claim amounts CLO 2 estimate the premium of a policyholder and the total claim amounts using the information of amounts made in previous years CLO 3 calculate some commonly used risk measures and explain their use and limitation CLO 3 calculate some commonly used risk measures and explain their use and limitation CLO 4 apply simulation methods within the context of actuarial models Pre-requisites Pass in STAT3903, or already enrolled in this course; or Pass in STAT3903, or already enrolled in this course; or Pass in MATH3603 or STAT3603 Strade Descriptors Y 2nd sem Offer in 2017 - 2018; Y Examination May A Demonstrate through mastery at an advanced level of extensive knowledge and skills required for attaining all beaming outcomes. Show stores analytical and critical abilities and logical thinking, and ability to apply knowledge and skills required for attaining at least most of learning outcomes. Show vidence of analytical and critical abilities and logical thinking, and ability to apply knowledge and skills required for attaining at least most of learning attaintic amply effective organizational and presentational skills. B Demonstrate straintic and trict abilities and logical thinking, and ability to apply knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to solve organi								
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reading and 2012, 4th edition)		Examination			· •	CLO 1,2,3,4		
	reading and			Willmot G. E.: Loss Models: From I	Data to Decisions (John	Wiley & Sons, In		
		moodle.hk						

STAT3907	Linear n	Linear models and forecasting (6 credits) Academic Year 2016						
Offering Department	Statistics	Statistics & Actuarial Science Quota						
Course Co-ordinator	Dr G Li, S	Dr G Li, Statistics & Actuarial Science (gdli@hku.hk)						
Teachers Involved	Dr G Li, S	Statist	ics & Actuarial Science					
Course Objectives			eals with applied statistical methods of linear models and inv linear models and time series analysis.	estigates various fore	casting procedures			
Course Contents & Topics			nd multiple linear regression; predicting; generalised linear, moving average, autoregressive-moving average and integressive-moving average aver					
Course Learning	On succes	On successful completion of this course, students should be able to:						
Outcomes	CLO 1	CLO 1 fit a simple or multiple linear regression model to real data						
	CLO 2	CLO 2 do ANOVA analysis						
	CLO 3	CLO 3 fit a generalized linear model to the real data						
	CLO 4	CLO 4 identify and fit a suitable AR, MA or ARMA model to real data						
	CLO 5	CLO 5 perform residual analysis						
	CLO 6	CLO 6 Do forecasting with these fitted models						
Pre-requisites	Pass in S	STAT2	2602 or STAT3902, or already enrolled in this course; and					
(and Co-requisites	Not for stu	student	s who have passed in STAT3600, or have already enrolled i	n this course; and				
and Impermissible								
combinations)	Not for stu	student	s who have passed in ECON2280, or have already enrolled	in this course; and				
	For BSc(A	c(Actua	rial Science) students only.					
	Not for stu	Not for students who have passed in STAT4601, or have already enrolled in this course; and Not for students who have passed in ECON2280, or have already enrolled in this course; and For BSc(Actuarial Science) students only.						

Offer in 2016 - 2017	Y 2nd	sem Offer in 2017 - 2		Examination	May		
Grade Descriptors (A+ to F)	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.					
	В	learning outcomes. Show e	ommand of a broad range of knowledge and s evidence of analytical and critical abilities and lo ons. Apply effective organizational and present	gical thinking, and ability to a			
	С	outcomes. Show evidence	incomplete command of knowledge and skil of some analytical and critical abilities and lo oderately effective organizational and presenta	gical thinking, and ability to			
	D	Show evidence of some co	hited command of knowledge and skills require therent and logical thinking, but with limited ana ns. Apply limited or barely effective organization	alytical and critical abilities. Sh			
	Fail	of analytical and critical abi	idence of command of knowledge and skills re- lities, logical and coherent thinking. Show very tional skills are minimally effective or ineffective	little or no ability to apply know			
Course Type	Lecture-ba	ased course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading / Self study				100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignments		Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4,5,6		
	Examination		One 3-hour written examination	75	CLO 1,2,4,5,6		
Required/recommended reading and online materials	Abraham G. E. P. B	& J. Ledolter: Statistical	Econometric Models and Economic Fo I Methods for Forecasting (John Wiley . Reinsel: Time Series Analysis: Fore	& Sons, 2005, 2nd edit	ion)		
	edition)	n) le.hku.hk					

STAT3908	Credibility theory and loss distributions (6 credits) Academic Year 2016							
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	construction determination	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	On succes	sful completion of this	course, students should be able	to:				
Outcomes	CLO 1 ap	ply limited fluctuation	(classical) credibility including crit	eria for both full and partial cr	edibility			
			sis using both discrete and contin					
		ply Buhlmann and Bu odel	hlmann-Straub models and und	erstand the relationship of the	ese to the Bayesian			
	CLO 4 ap	ply conjugate priors in	Bayesian analysis and in particu	lar the Poisson-gamma mode				
	CLO 5 ap	ply empirical Bayesiar	n methods in the nonparametric a	nd semiparametric cases				
	CLO 6 construct and select empirical models							
		· · · · ·	lity of a fitted model and/or compa	are models				
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in S	FAT2602 or STAT3902	2 01 21 41 3900					
Offer in 2016 - 2017	Y 1st	sem Offer in 2017 -	2018 : Y	Examination	Dec			
Grade Descriptors (A+ to F)	Α	Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and a apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organization presentational skills.						
	В	Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the cours learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familia and some unfamiliar situations. Apply effective organizational and presentational skills.						
	С							
	D							
	Fail Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lac 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-ba	ased course						
Course Teaching	Activities		Details		No. of Hours			
& Learning Activities	Lectures				36			
	Tutorials				12			
	•	Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignme	nts		25	CLO 1,2,3,4,5,6,7			

		Coursework (assignments, tutorials, and a class test)		
	Examination	One 3-hour written examination	75	CLO 1,2,3,4,5,6,7
Required/recommended reading and online materials	Klugman S. A., Panjer H. H., & Wil edition).	Imot G. E.: Loss Models: From Dat	a to Decisions (John Wiley	/ & Sons, 2010, 4th
Course Website	moodle.hku.hk			

STAT3909	Advanced life contingencies (6 credits) Act				2016		
Offering Department	Statistics & Actuarial Science Quota						
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science (hlyang@hku.hk)						
Feachers 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	This course is a continuation of the materials covered in STAT3901. We shall discuss the following topics: Loss-at-						
& Topics	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	On successful completion of this course, students should be able to:						
Outcomes	CLO 1 calculate benefit reserves for life insurances and annuities						
	CLO 2 incorporate expenses in gross premium and calculate policy value based on the gross premium for life insurances and annuities						
	CLO 3 understand multiple decrement models and calculate the life insurances and annuities in models with mult decrements						
	CLO 4 understand the multiple state model and the Kolmogorov forward equations						
	CLO 5 understand multiple life models and calculate the life insurances and annuities in multi-life models						
	CLO 6 understand the interest risk and calculate the life insurances and annuities when the interest rate is not a constant, and understand profit testing						
Pre-requisites	Pass in STAT3901, or already enrolled in this course; and						
(and Co-requisites and Impermissible combinations)	For BSc(A	Actuarial Science) stud	dents only.				
Offer in 2016 - 2017	Y 2nd	sem Offer in 2017	- 2018 : Y	Examination	May		
Grade Descriptors (A+ to F)	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 familia 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. 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	Activities	5	Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	-	Self study			100		
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4,5,6		
	Examinat		One 3-hour written examination	75	CLO 1,2,3,4,5,6		
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.hk	ku.hk					
STAT3910	Financial economics I (6 credits)			Academic Year	2016		
Offering Department	Statistics & Actuarial Science			Quota			
Course Co-ordinator	Prof H L Yang, Statistics & Actuarial Science (hlyang@hku.hk)						
Feachers Involved		ang, Statistics & Actu					
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			American options; conditional expectation	n and discrete-time marti	ngale, discrete-tim		
& Topics	option-pricing theory; binomial model and its Greeks; true probabilities vs. risk-neutral probabilities; estimating						

CLO 3

			ability theory, include probability spa	ace, random variable, co	nditional probability,		
	conditional expectation and discrete time martingale CLO 4 understand the Black-Scholes formula and its assumptions, the option Greeks, option elasticity, and						
	implied volatility						
	CLO 5 understand the hedging strategies and portfolio, market-maker risk, self-financing portfolio						
		nderstand exotic optic TAT2602 or STAT390					
Pre-requisites (and Co-requisites			jz; and sed in STAT3618, or have already enro	olled in this course: and			
and Impermissible combinations)			sed in FINA2322, or have already enro				
Offer in 2016 - 2017		sem Offer in 2017		Examination	Dec		
Grade Descriptors (A+ to F)	Α	learning outcomes. Show	mastery at an advanced level of extensive kn v strong analytical and critical abilities and logic wide range of complex, familiar and unfamili	al thinking, with evidence of origi	inal thought, and ability to		
	В	learning outcomes. Show and some unfamiliar situ	I command of a broad range of knowledge and w evidence of analytical and critical abilities and ations. Apply effective organizational and prese	logical thinking, and ability to ap ntational skills.	oply knowledge to familia		
	С	outcomes. Show eviden familiar situations. Apply	ut incomplete command of knowledge and sl ice of some analytical and critical abilities and moderately effective organizational and presen	logical thinking, and ability to a tational skills.	apply knowledge to mos		
	D	Show evidence of some knowledge to solve prob	limited command of knowledge and skills requ coherent and logical thinking, but with limited a lems. Apply limited or barely effective organizati	nalytical and critical abilities. Sh ional and presentational skills.	ow limited ability to apply		
	Fail	of analytical and critical Organization and preser	evidence of command of knowledge and skills a abilities, logical and coherent thinking. Show ver tational skills are minimally effective or ineffectiv	ry little or no ability to apply know			
Course Type Course Teaching		ased course	Details	1	No. of Hours		
& Learning Activities	Activities Lectures	3			No. of Hours		
U	Tutorials				12		
	-	/ Self study			100		
Assessment Methods and Weighting	Methods	i	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignme		Coursework (assignments) tutorials, and a class test)	20	CLO 1,2,3,4,5,6		
Required/recommended eading and	Robert L.	Examination One 3-hour written examination 75 CLO 1,2,3,4 Robert L. McDonald: Derivatives Markets (2nd edition), Chapters 10-14					
online materials			Lecture notes on conditional expectations and martingale				
O		: Options, Futures and	d other Derivatives (2008, 7th edition)				
Course website	moodle.hl		d other Derivatives (2008, 7th edition)				
	-		d other Derivatives (2008, 7th edition)				
	moodle.hl	ku.hk		Academic Yea	r 2016		
STAT3911	moodle.hl			Academic Yea Quota	ır 2016 		
STAT3911 Offering Department Course Co-ordinator	moodle.hl Financia Statistics Prof H L Y	ku.hk al economics II (6 & Actuarial Science Yang, Statistics & Actu	credits) Jarial Science (<i>hlyang@hku.hk</i>)				
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Course Type Course Teaching	FinanciaStatisticsProf H L YProf H L YThis courside techniqueBrownianSharpe raelasticity atthe SharpOn succesCLO 1CLO 2CLO 3CLO 4CLO 5Pass in MY2ncABCDFailLecture-bActivities	ku.hk al economics II (6 & Actuarial Science Yang, Statistics & Actu Yang, Statistics & Actu yang, Statistics & Actu se is an advanced cc c calculus, and intere is needed for SoA Exi motion; introduction atio and risk premium; and volatility; Vasicel- ve-ratio equality consti- ssful completion of th understand Brownia understand the Ito c understand the Blac understand the Blac understand the Blac understand the Blac and completion of th State 1000 and 1000 and 1000 and 1000 ATH3603 or STAT36 d sem Offer in 2017 Demonstrate thorough learning outcomes. Show apply knowledge to a presentational skills. Demonstrate general b outcomes. Show eviden familiar situations. Apply Demonstrate little or no of analytical and critical - Organization and preser ased course	credits) Jarial Science (<i>hlyang@hku.hk</i>) Jarial Science Durse on the option pricing theory. The st models. This course and STAT39 am MFE. To stochastic calculus; arithmetic a Black-Scholes equation; risk-neutral st, Cox-Ingersoll-Ross, and Black-Derreraint; Black's model; options on zero-creation is course, students should be able to: In motion and its properties alculus and Ito formula k-Scholes model and option pricing the a hedging and some basic risk manage asic interest rate models O3 or STAT3903 or STAT3910 - 2018 : Y mastery at an advanced level of extensive kn v strong analytical and critical abilities and logic wide range of complex, familiar and unfamili command of a broad range of knowledge and stills requ coherent and logical thinking, but with limited a lems. Apply limited or barely effective organizational and presen ut incomplete command of knowledge and skills requ coherent and logical thinking, but with limited a lems. Apply limited or barely effective organizational and presen ut incomplete command of knowledge and skills requ coherent and logical thinking, but with limited a lems. Apply limited or barely effective organizational and presen ut incomplete command of knowledge and skills requ coherent and logical thinking, but with limited a lems. Apply limited or barely effective organizational and presen ut incomplete command of knowledge and skills requ coherent and logical thinking. Show verial abilities and skills requered by the command of knowledge and skills requered by the command of knowledge and skills requered by effective organizational and presen ut incomplete command of knowledge and skills requered by effective organizational and presen ut incomplete command of knowledge and skills requered by effective organizational and presen ut incomplete command of knowledge and skills requered by effective organizational and presen ut incomplete command of knowledge and skills requered by the strong and the strong and skills requered by the strong and the strong and presen ut incomplete	Quota Provide a statistical and critical and critical ability to apply known and presentational skills. Provide a skills required for attaining are structured for attaining some of the catalogue and skills. Provide a skills required for attaining and ability to a provide a skills. Provide a skills and ability to a provide a skills. Provide a skills	May rataining all the course inal thought, and ability to apply knowledge to familian to of the course learning apply knowledge to most ourse learning outcomes. Lack wiedge to solve problems: No. of Hours		
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	Reading / Self study			100			
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignments	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4,5			
	Examination	One 3-hour written examination	75	CLO 1,2,3,4,5			
Required/recommended reading and online materials	John Hull: Options, Futures and Of Alison Etheridge: A Course in Fina	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						

	Advanc	ed contingencies (6 credits)	Academic Year	r 2016	
Offering Department	Statistics	& Actuarial Science		Quota		
Course Co-ordinator	Dr E C K	Cheung, Statistics & Ad	ctuarial Science (eckc@hku.hk)			
Teachers Involved	Dr E C K	Cheung, Statistics & Ad	ctuarial Science			
Course Objectives	insurance	e. [Students are remind	ced stochastic models and actuarial te led that this course is a part of the rec a and Faculty of Actuaries, U.K.]			
Course Contents & Topics	applicatio	ons of actuarial techniqu	the multiple state model; unit-linked ues to a wide range of insurance prob ple dividend-ruin models for non-life ir	plems. Equity linked insu		
Course Learning			course, students should be able to:			
Outcomes	tr	ansitions	multiple state models to evaluate	•	•	
	ir	nsurance products	nked insurance products, and the me		ig the equity linke	
			transform and its application to option	pricing		
		alue equity-linked death				
			s in simple risk processes for non-life i unted dividends in simple risk process			
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in S Pass in S	STAT3909; and	nrolled in this course; and			
Offer in 2016 - 2017	Y 1s	t sem Offer in 2017 - 2	2018 · Y	Examination	Dec	
Grade Descriptors (A+ to F)	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.					
	В	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 familial and some unfamiliar situations. Apply effective organizational and presentational skills.				
			evidence of analytical and critical abilities and lo	ogical thinking, and ability to app		
	С	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skii o of some analytical and critical abilities and lo oderately effective organizational and presenta	bgical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to a tional skills.	ply knowledge to familia of the course learnin pply knowledge to mos	
	C D	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some co knowledge to solve proble	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil of some analytical and critical abilities and lo toderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited ans ms. Apply limited or barely effective organization	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to a tional skills. ed for attaining some of the co alytical and critical abilities. Sho nal and presentational skills.	ply knowledge to familia of the course learnin pply knowledge to most urse learning outcomes ow limited ability to appl	
		and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some c knowledge to solve proble Demonstrate little or no ev of analytical and critical ab	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil e of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited ana	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes ow limited ability to appl learning outcomes. Lac	
Course Type	D Fail Lecture-b	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cr knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta based course	evidence of analytical and critical abilities and lc ions. Apply effective organizational and present incomplete command of knowledge and skil of some analytical and critical abilities and lc noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization vidence of command of knowledge and skills re uilties, logical and coherent thinking. Show very	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems	
Course Teaching	D Fail	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cr knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta based course	evidence of analytical and critical abilities and lc ions. Apply effective organizational and present incomplete command of knowledge and skil of some analytical and critical abilities and lc noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization vidence of command of knowledge and skills re uilties, logical and coherent thinking. Show very	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes ow limited ability to appl learning outcomes. Lac	
Course Teaching	D Fail Lecture-b	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cr knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta pased course	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization ridence of command of knowledge and skills req- tilities, logical and coherent thinking. Show very titonal skills are minimally effective or ineffective	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems	
Course Teaching	D Fail Lecture-b Activitie Lectures Tutorials	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some co knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta Dased course	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization ridence of command of knowledge and skills req- tilities, logical and coherent thinking. Show very titonal skills are minimally effective or ineffective	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36 12	
Course Teaching	D Fail Lecture-b Activitie Lectures Tutorials	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cr knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta pased course	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization ridence of command of knowledge and skills req- tilities, logical and coherent thinking. Show very titonal skills are minimally effective or ineffective	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36	
Course Teaching & Learning Activities Assessment Methods	D Fail Lecture-b Activitie Lectures Tutorials	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some co knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta based course s	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization ridence of command of knowledge and skills req- tilities, logical and coherent thinking. Show very titonal skills are minimally effective or ineffective	ogical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to ap tional skills. ad for attaining some of the co- al and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36 12	
Course Teaching & Learning Activities Assessment Methods	D Fail Lecture-b Activitie Lectures Tutorials Reading	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some co knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta based course s	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited ana ms. Apply limited or barely effective organization idence of command of knowledge and skills re- ilities, logical and coherent thinking. Show very titonal skills are minimally effective or ineffective Details	bgical thinking, and ability to app ational skills. Is required for attaining most ogical thinking, and ability to a tional skills. and for attaining some of the co alytical and critical abilities. Sho nal and presentational skills. quired for attaining the course I little or no ability to apply know b. Weighting in final	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2,3,4,5,6	
Course Teaching & Learning Activities Assessment Methods	D Fail Lecture-b Activitie Lectures Tutorials Reading Methods	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cr knowledge to solve problet Demonstrate little or no ev of analytical and critical ab Organization and presenta based course s / Self study s ents	evidence of analytical and critical abilities and Ic ions. Apply effective organizational and present incomplete command of knowledge and skills a of some analytical and critical abilities and Ic oderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization idence of command of knowledge and skills re- tilities, logical and coherent thinking. Show very titional skills are minimally effective or ineffective Details Details Coursework (assignments,	bgical thinking, and ability to app ational skills. Is required for attaining most bgical thinking, and ability to a tional skills. ad for attaining some of the co alytical and critical abilities. Sho nal and presentational skills. quired for attaining the course I little or no ability to apply know Weighting in final course grade (%)	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to app learning outcomes. Lac ledge to solve problems No. of Hours 36 12 100 Assessment Methods to CLO Mapping	
Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading and	D Fail Lecture-t Activitie Lectures Tutorials Reading Methods Assignm Examina Bowers, I Dickson, CT5 Con	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some co knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta based course s / Self study s ents ttion N. L. et al.: Actuarial Math tingencies Core Technic	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skil a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited ana ms. Apply limited or barely effective organization idence of command of knowledge and skills require litities, logical and coherent thinking. Show very tional skills are minimally effective or ineffective Details Details Coursework (assignments, tutorials, and a class test) One 3-hour written examination thematics (Society of Actuaries, 1997, ematics for Life Contingent Risks (Car cal Core Reading (Institute of Actuaries)	pgical thinking, and ability to app ational skills. Is required for attaining most bgical thinking, and ability to a tional skills. ad for attaining some of the co alytical and critical abilities. Sho nal and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2,3,4,5,6	
Course Type Course Teaching & Learning Activities Assessment Methods and Weighting Required/recommended reading and online materials Course Website	D Fail Lecture-t Activitie Lectures Tutorials Reading Methods Assignm Examina Bowers, I Dickson, CT5 Con	and some unfamiliar situat Demonstrate general but outcomes. Show evidence familiar situations. Apply m Demonstrate partial but lin Show evidence of some cc knowledge to solve proble Demonstrate little or no ev of analytical and critical ab Organization and presenta assed course s / Self study s ents tion N. L. et al.: Actuarial Math tingencies Core Technic totes on equity linked in:	evidence of analytical and critical abilities and lo ions. Apply effective organizational and present incomplete command of knowledge and skills a of some analytical and critical abilities and lo noderately effective organizational and presenta mited command of knowledge and skills require oherent and logical thinking, but with limited and ms. Apply limited or barely effective organization idence of command of knowledge and skills req- tilities, logical and coherent thinking. Show very tional skills are minimally effective or ineffective Details Coursework (assignments, tutorials, and a class test) One 3-hour written examination thematics (Society of Actuaries, 1997, mematics for Life Contingent Risks (Car	pgical thinking, and ability to app ational skills. Is required for attaining most bgical thinking, and ability to a tional skills. ad for attaining some of the co alytical and critical abilities. Sho nal and presentational skills. quired for attaining the course I little or no ability to apply know	ply knowledge to familia of the course learnin pply knowledge to mos urse learning outcomes w limited ability to appl learning outcomes. Lac ledge to solve problems No. of Hours 36 12 100 Assessment Methods to CLO Mapping CLO 1,2,3,4,5,6	

STAT3952	Investment and asset management (6 credits)	Academic Year	2016	
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 management of an investment portfolio. Emphasis will be place insurance industry such as investment strategy formulation and interest st	ed on methods to tackle		
Course Contents & Topics	This course provides an overview on the problems faced by actual concepts to investment practice. This course will cover the following Asset Allocation, Managing Fixed Income Portfolios and Performance Income P	g topics: Investment Man		

Course Learning	On successful completion of this course, students should be able to:					
Outcomes	CLO 1 explain how an investment policy and an investment strategy can help manage risk CLO 2 identify the obligations of a fiduciary in managing investment portfolios CLO 3 describe how to select an investment strategy for an individual and the particular issues influencing					
		nvestment strategies for i	0,	iual and the particular		
		0	based capital management			
	CLO 5 d	lescribe asset allocation	strategies that can be used to construc	t an asset portfolio		
			ncial and non-financial risks faced by a			
		•	antify major types of risk exposure, ap	ply ALM principles to th	e establishment of	
		nvestment policy and stra		management style des	scribe and assess	
		CLO 8 select or build a benchmark for a given portfolio or portfolio management style, describe and assess performance measurement methodologies for investment portfolios				
Pre-requisites	Pass in S	Pass in STAT3901; and				
(and Co-requisites		•	d in FINA2320, or have already enrolle	d in this course; and		
and Impermissible combinations)	For BSc(Actuarial Science) stude	nts only.			
Offer in 2016 - 2017	N Of	fer in 2017 - 2018 : N		Examination		
Grade Descriptors	A		stery at an advanced level of extensive knowl		attaining all the course	
(A+ to F)			trong analytical and critical abilities and logical the range of complex, familiar and unfamiliar s			
	В	learning outcomes. Show e	ommand of a broad range of knowledge and sk vidence of analytical and critical abilities and log ons. Apply effective organizational and presentat	ical thinking, and ability to app		
	С	Demonstrate general but i outcomes. Show evidence	incomplete command of knowledge and skills of some analytical and critical abilities and log	required for attaining most ical thinking, and ability to ap	of the course learning ply knowledge to most	
	D	Demonstrate partial but lim	oderately effective organizational and presentation ited command of knowledge and skills required herent and logical thinking, but with limited analy	for attaining some of the cou		
	Fail	knowledge to solve problem	ns. Apply limited or barely effective organizational dence of command of knowledge and skills requ	al and presentational skills.		
	Fail	of analytical and critical abil	lities, logical and coherent thinking. Show very lit			
• •			ional skills are minimally effective or ineffective.			
Course Type Course Teaching	Activitie	based course	Details		No. of Hours	
& Learning Activities	Lectures		Details		36	
	Tutorials				12	
		/ Self study			100	
Assessment Methods	Methods	5	Details	Weighting in final	Assessment	
and Weighting				course grade (%)	Methods to CLO Mapping	
	Assignments		Assignments, tutorials/example classes, group discussions, project and presentation	50	CLO 1,2,3,4,5,6,7,8	
	Examina	ation	One 2-hour written examination	50	CLO 1,2,3,4,5,6,7,8	
Required/recommended reading and online materials	Z. Bodie, Crouhy, C F. J. Fabo	A. Kane, & A. Marcus: I Galai, & Mark: Risk Mana ozzi: Handbook of Fixed	ment Management for Insurers (Frank on nvestments (McGraw-Hill, 2005, 7th ec agement (2001) Income Securities (McGraw-Hill, 2005 anagement: An Equilibrium Approach (2	lition) , 7th edition)	9)	
Course Website	moodle.h		9 1 11 (,		
Additional Course Information	Dynamic	Process (Wiley, 2007, 3	D.L. Tuttle, J.E. Pinto & D.W. McL rd edition) eent of Financial Institutions (2003)	eavey: Managing Invest	tment Portfolios, A	
	_					
STAT3953		nentals of actuarial p	practice (6 credits)	Academic Year		
Offering Department		& Actuarial Science	Science (flouieng@blueble)	Quota		
Course Co-ordinator Teachers Involved		Ng, Statistics & Actuaria Ng, Statistics & Actuaria	I Science (flouisng@hku.hk)			
Course Objectives		0,	out the business environment and exp	oses them to practical re	eal-world situation	
		actuarial control cycle a				
Course Contents & Topics	This cour Actuary, placed or	rse provides an overviev External Forces, Risk in n applications to various	w on selected materials relating to the Actuarial Problems, Design and Prici financial security programmes includin lans, investment funds and property &	ng of Actuarial Solutions g individual life insurance	s. Emphasis will be	
Course Learning			course, students should be able to:	ousdairy mouralloc.		
Outcomes	CLO 1 p	•	ription of financial security systems, c	common actuarial techni	ques and practica	
	CLO 2 d	escribe actuarial practice	es, principles, approaches, methods, co a across the traditional areas of practice		and solutions	
	CLO 4 e	xplain actuarial practice onsultant to those provid	es as applied directly on behalf of fir lers	nancial security system	providers or as a	
			ntraditional and emerging areas of pra			
	CLO 6 p	rovide context for the sp	ecific mathematical and technical skills	developed in the basic a	actuarial courses	

For BSc(Actuarial Science) students only.

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Grade Descriptors (A+ to F)	A	learning outcomes. Show s	astery at an advanced level of extensive l strong analytical and critical abilities and log de range of complex, familiar and unfam	ical thinking, with evidence of origin	al thought, and ability to	
	В					
	С	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 outcom Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to a knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.				
	Fail	of analytical and critical ab	idence of command of knowledge and skills ilities, logical and coherent thinking. Show v tational skills are minimally effective or ineff	ery little or no ability to apply knowle		
Course Type	Lecture-ba	ased course	· · · · · · · · · · · · · · · · · · ·			
Course Teaching	Activities	3	Details		No. of Hours	
& Learning Activities	Lectures				36	
	Project work				12	
	Reading / Self study				100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping	
	Presentation		oral presentation	25	CLO 4,5,6	
	Project reports		written report	50	CLO 4,5,6,7	
	Test	•	in-class quizzes	25	CLO 1,2,3,4,5,6,7	
Required/recommended reading and online materials	Bellis, C., Cycle (Ins Brown, R Insurance	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.hl	ku.hk				
STAT3954	Current	topics in actuarial	science (6 credits)	Academic Year	2016	
Offering Department		& Actuarial Science	,	Quota		
Course Co-ordinator			Science (hrntlwk@hku.hk)			
Teachers Involved		istics & Actuarial Science				

	The Wirk El, Statistics & Actualian Science (Initian Centre China China)					
Teachers Involved	TBC, Statistics & Actuarial Science					
Course Objectives	basic cap	ourse aims at providing practical elements for actuarial students including daily life actuarial practice and the capability to understand, research in and handle the laws as and when situations would arise, which will t students in their coming future career.				
Course Contents & Topics		se covers a full range of topics related to both areas including 1) Practical Actuarial Practice and 2 Legal Thinking.				
	Insurance	ical Actuarial Practice: It covers the major practical topics in both Life and Casualty areas. For Life e, it covers the full picture of actuarial control cycle including Product Pricing, Valuation, Financia and Experience Analysis. For General Insurance, it covers the backbone areas including Product Pricing ation.				
	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	On succes	ssful completion of this course, students should be able to:				
Outcomes	CLO 1 have a basic understanding regarding Actuarial Control Cycle from A to Z for Life Insurance and General Insurance					
	CLO 2 pc	ossess some experience regarding fundamental actuarial practice through practical project				
	CLO 3 possess basic understanding of the legal system in Hong Kong					
	CLO 4 possess fundamental knowledge in certain core legal aspects such as the law of contract and the law of tort					
	CLO 5 possess fundamental knowledge of the law of insurance					
	CLO 6 conduct elementary legal researches when facing with legal problems					
	CLO 7 understand the basic elements of a routine judgment, the matrix of the facts and the law involved					
Pre-requisites		TAT3901, or already enrolled in this course; or				
(and Co-requisites		TAT3909, or already enrolled in this course; and				
and Impermissible	For BSc(A	Actuarial Science) students only.				
combinations)						
Offer in 2016 - 2017	N Off	er in 2017 - 2018 : N Examination				
Grade Descriptors (A+ to F)	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.				
	В	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.				
	С	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. 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				
	D	familiar situations. Apply moderately effective organizational and presentational skills. Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes.				

Department of Statistics & Actuarial Science

	of analytical and criti	 no evidence of command of knowledge and skills req ical abilities, logical and coherent thinking. Show very li esentational skills are minimally effective or ineffective. 					
Course Type	Lecture-based course	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			
	Assignments	Coursework (assignments, practical project & class test(s))	100	CLO 1,2,3,4,5,6,7			
Course Website	moodle.hku.hk						

STAT3955	Survival	analysis (6 credits)		Academic Year	2016		
Offering Department	Statistics &	Actuarial Science		Quota			
ourse Co-ordinator	Dr J F Xu,	Statistics & Actuarial So	cience (xujf@hku.hk)				
Feachers Involved	Dr J F Xu,	Statistics & Actuarial So	cience				
Course Objectives		This course is concerned with how models which predict the survival pattern of humans or other entities ar established. This exercise is sometimes referred to as survival-model construction.					
Course Contents & Topics	include: th commonly survival dis from possi kernel den means of t	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	On succes	sful completion of this c	ourse, students should be able to:				
Outcomes	CLO 2 pe me CLO 3 an	 CLO 1 acquire a clear understanding of the nature of failure time data or survival data, a generalization of the concept of death and life CLO 2 perform estimation for some commonly used survival models under different types of censoring mechanisms CLO 3 analyze survival data using the Cox's semiparametric proportional hazards model CLO 4 extend the Cox's model to a multivariate setup to accommodate multivariate survival data 					
Pre-requisites		AT3902, or already enr	•				
(and Co-requisites and Impermissible combinations)		AT3600 or STAT3901					
Offer in 2016 - 2017	Y 2nd	sem Offer in 2017 - 2	018 : Y	Examination	May		
Grade Descriptors (A+ to F)	AB	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.					
	С	 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. 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 					
	D	familiar situations. Apply moderately effective organizational and presentational skills. 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. Lac 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-ba	ised course					
Course Teaching	Activities		Details		No. of Hours		
& Learning Activities	Lectures				36		
	Tutorials				12		
	Reading /	Self study			100		
Assessment Methods and Weighting	Methods	•	Details	Weighting in final	Assessment		
				course grade (%)	Methods to CLO Mapping		
	Assignme		Coursework (assignments, tutorials, and a class test)	25	to CLO Mapping CLO 1,2,3,4		
	Assignme Examinati			- . ,	to CLO Mapping		
	Examinati Cox, D. R. Hosmer, D 1999) Klein, J. P	on and Oakes, D.: Analysi). W. and Lemeshow, S	tutorials, and a class test)	25 75 II, 1984) sion Modeling of Time to	to CLO Mapping CLO 1,2,3,4 CLO 1,2,3,4 Event Data (Wile)		

STAT3956	Pension funds and pension mathematics (6 credits)	Academic Year	2016
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			
-			

		his course covers the basics of pension plan design and pension fund management, as well as the fundamentals f pension plan valuations using different actuarial cost methods. The students will be introduced to the application				
	of actuaria	al valuation techniques to	o the funding and accounting of pens	ion plans.	••	
Course Contents & Topics	obligation		ered: Fundamentals of private pens s and their effects on cost patterns;			
Course Learning		, ,	ourse, students should be able to:			
Outcomes	CLO 1	calculate the pension be	nefits in accordance with the provisio	ons of a pension plan		
	CLO 2	calculate the normal cos	t and actuarial liabilities using differen	nt actuarial cost methods	3	
			alyses for pension valuations			
			nptions and methods for funding or a	0 · · ·		
			sults presented in actuarial valuation			
Pre-requisites (and Co-requisites and Impermissible combinations)		CLO 6 understand the principles of asset and liability modeling as related to pension plans Pass in STAT3909				
Offer in 2016 - 2017	Y 1st	sem Offer in 2017 - 20	D18 : Y	Examination	Dec	
Grade Descriptors (A+ to F)	A	Demonstrate thorough mas learning outcomes. Show st apply knowledge to a wide presentational skills.	tery at an advanced level of extensive know rong analytical and critical abilities and logical e range of complex, familiar and unfamiliar	thinking, with evidence of origi situations. Apply highly effe	nal thought, and ability to organizational and	
	В	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.				
	С					
	D	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					
Course Type	Lecture-ba	ased course				
Course Teaching	Activities De		Details		No. of Hours	
& Learning Activities	Lectures				36	
	Tutorials				12	
		/ Self study			100	
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping	
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4,5,6	
	E construction of the	·				
Required/recommended	Examinat		One 3-hour written examination	75 tion)	CLO 1,2,3,4,6	
Required/recommended reading and online materials	Arthur W. McGill, D. William H. Morneau Actuarial Actuarial Measuring Actuarial David Far Cost Meth	Anderson: Pension Mat M., Brown, K.N., Haley, Aitken: Problem-Solvin Sobeco: Handbook of Ca Standard of Practice No. Standard of Practice I g Pension Obligations Standard of Practice No. ber, ASA, EA, MSPA, V nods-A Review, 3rd Editi	One 3-hour written examination hematics for Actuaries (2006, 3rd edi J.J., Schieber, S.J.: Fundamentals of g Approach to Pension Funding and anadian Pension & Benefit Plans (20 27, Selection of Economic Assumpti No. 35, Selection of Demographic 44, Selection and Use of Asset Valu Villiam Farrimond, FSPA, Duane Ma on, 1999, ACTEX Publications at Methods-A Review, ACTEX Publica	tion). f Private Pensions (2010 Valuation, (2nd edition). 08, 14th Edition) ons for Measuring Pens and Other Noneconon ation Methods for Pensid yer, MSPA, George Mat	0, 9th Edition) ion Obligations nic Assumptions for on Valuations	
reading and	Arthur W. McGill, D. William H. Morneau Actuarial Measuring Actuarial David Far Cost Meth 2001 Sup	Anderson: Pension Mat M., Brown, K.N., Haley, Aitken: Problem-Solvin Sobeco: Handbook of Ca Standard of Practice No. Standard of Practice No. g Pension Obligations Standard of Practice No. ber, ASA, EA, MSPA, V bods-A Review, 3rd Editi plement to Actuarial Cos	hematics for Actuaries (2006, 3rd edi J.J., Schieber, S.J.: Fundamentals of g Approach to Pension Funding and anadian Pension & Benefit Plans (20 27, Selection of Economic Assumpti No. 35, Selection of Demographic 44, Selection and Use of Asset Valu Villiam Farrimond, FSPA, Duane Maton, 1999, ACTEX Publications	tion). If Private Pensions (2010 Valuation, (2nd edition). 08, 14th Edition) ons for Measuring Pens and Other Noneconon ation Methods for Pensi- yer, MSPA, George Mat ations	0, 9th Edition) ion Obligations nic Assumptions for on Valuations ray, FSPA: Actuarial	

STAT4602	Multiv	variate data analysis (6 credits)	Academic Year	2016		
Offering Department	Statistic	cs & Actuarial Science	Quota	50		
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	On suc	cessful completion of this course, students should be able to:				
Outcomes	CLO 1	analyze multivariate data with main SAS procedures, such as PRO PROC CANCORR, PROC PRINCOMP, PROC FACTOR, PROC DISC	'	, ,		
		compare the mean structure of multiple measurements for one of multivariate MANOVA and profile analysis	or more than one	population(s) by		
	CLO 3	investigate the linear associations among one/two group(s) of variab correlation and multivariate regression	les by multiple, par	tial and canonical		
		CLO 4 explore the latent linear structure of a data set with multiple measurements by principal components analysis and factor analysis				
	CLO 5	classify observations of a population with one or more than one measu	urements by discrin	ninant analysis		

combinations)	Pass in STAT3600 or STAT3907							
Offer in 2016 - 2017	Y 2nd	sem Offer in 2017 - 2	018 : Y	Examination	May			
Grade Descriptors (A+ to F)	Α	learning outcomes. Show st	tery at an advanced level of extensive kno rong analytical and critical abilities and logical e range of complex, familiar and unfamiliar	thinking, with evidence of origi	nal thought, and ability to			
	В	learning outcomes. Show ev	mmand of a broad range of knowledge and vidence of analytical and critical abilities and lo ns. Apply effective organizational and present	ogical thinking, and ability to ap				
	С	outcomes. Show evidence	ncomplete command of knowledge and ski of some analytical and critical abilities and lo derately effective organizational and presenta	ogical thinking, and ability to a				
	D	Show evidence of some col	ted command of knowledge and skills requir- nerent and logical thinking, but with limited and s. Apply limited or barely effective organizatio	alytical and critical abilities. Sh				
	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-ba	ased course						
Course Teaching	Activities	No. of Hours						
& Learning Activities	Lectures			36				
	Tutorials			12				
	Reading / Self study				100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	50	CLO 1,2,3,4,5			
	Examinat	ion	One 3-hour written examination	50	CLO 1,2,3,4,5			
reading and online materials								
	moodle.hk							

STAT4607	Credit ri	sk analysis (6 d	credits)		Academic Year	2016					
Offering Department	Statistics	& Actuarial Science	e		Quota						
Course Co-ordinator	Dr K P Wa	Dr K P Wat, Statistics & Actuarial Science (watkp@hku.hk)									
Teachers Involved	Dr K P Wa	at, Statistics & Actu	uarial Science								
Course Objectives	other cour change in measuring	For a commercial bank, credit risk has always been the most significant. It is the risk of default on debt, swap, other counterparty instruments. Credit risk may also result from a change in the value of an asset resulting from change in the counterparty's creditworthiness. This course will introduce students to quantitative models f measuring and managing credit risk. It also aims to provide students with an understanding of the credit ri methodology used in the financial industry and the regulatory framework in which the credit risk models operate.									
Course Contents & Topics	Probabiliti internal ra	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	On succes	ssful completion of	this course, students shou	ld be able to:							
Outcomes	CLO 1 ur	nderstand the Base	el requirements for credit ris	ik							
	CLO 2 es	stimate credit score	es using the logit model								
		nderstand and estir ortality method	mate default probabilities u	sing various approache	s such as Moody's	s, the KMV and the					
	CLO 4 understand the concept of credit value-at-risk and the CreditMetrics approach										
			epi or orean value-at-risk a	nu ine oreunimentos ap		CLO 5 estimate default correlations					
	CLO 5 es CLO 6 as	stimate default corr ssess rating system	elations าร								
Pre-requisites (and Co-requisites and Impermissible combinations)	CLO 5 es CLO 6 as	stimate default corr ssess rating system	elations			sity level 3 course)					
(and Co-requisites and Impermissible	CLO 5 es CLO 6 as Pass or al	stimate default corr ssess rating system Iready enrolled in S	elations าร			sity level 3 course) May					
(and Co-requisites and Impermissible combinations)	CLO 5 es CLO 6 as Pass or al	stimate default corr sess rating system ready enrolled in S d sem Offer in 20 Demonstrate thoroug learning outcomes. S	elations ns STAT3618 or STAT3905 or	STAT3910 or (FINA232 I of extensive knowledge ar abilities and logical thinking, v	22 and any Univer Examination ad skills required for a with evidence of origina	May attaining all the course al thought, and ability to					
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 5 es CLO 6 as Pass or al	stimate default corr sesss rating system ready enrolled in S d sem Offer in 20 Demonstrate thoroug learning outcomes. S apply knowledge to presentational skills. Demonstrate substar learning outcomes.	elations TAT3618 or STAT3905 or 17 - 2018 : Y gh mastery at an advanced leve how strong analytical and critical a wide range of complex, fam ntial command of a broad range how evidence of analytical and cr	STAT3910 or (FINA232 I of extensive knowledge ar abilities and logical thinking, v liar and unfamiliar situation of knowledge and skills requ titcal abilities and logical think	22 and any Univer Examination nd skills required for a with evidence of origins is. Apply highly effect uired for attaining at le king, and ability to apply	May attaining all the course al thought, and ability to tive organizational and east most of the course					
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 5 es CLO 6 as Pass or al Y 2nc A	stimate default corr sess rating system ready enrolled in S sem Offer in 20 Demonstrate thoroug learning outcomes. S apply knowledge to presentational skills. Demonstrate substar learning outcomes. S and some unfamiliar Demonstrate genera outcomes. Show evit	elations TAT3618 or STAT3905 or 17 - 2018 : Y gh mastery at an advanced leve show strong analytical and critical a wide range of complex, fam ntial command of a broad range	STAT3910 or (FINA232 I of extensive knowledge arr abilities and logical thinking, y liar and unfamiliar situation of knowledge and skills requir itical abilities and logical think ational and presentational skills nowledge and skills require tical abilities and logical think	22 and any Univer Examination ad skills required for a with evidence of origina is. Apply highly effect uired for attaining at le king, and ability to appl ills. ed for attaining most of king, and ability to appl	May attaining all the course al thought, and ability to tive organizational and ast most of the course ly knowledge to familiar of the course learning					
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 5 es CLO 6 as Pass or al Y 2nc A B	stimate default corr sesss rating system ready enrolled in S bemonstrate thoroug learning outcomes. S apply knowledge to presentational skills. Demonstrate substar learning outcomes. S and some unfamiliar Demonstrate genera outcomes. Show evit familiar situations. Ap Demonstrate partial Show evidence of so	elations hs STAT3618 or STAT3905 or 17 - 2018 : Y gh mastery at an advanced leve how strong analytical and critical a wide range of complex, fam ntial command of a broad range show evidence of analytical and cri situations. Apply effective organiz I but incomplete command of k dence of some analytical and cri source of some analytical and cri but incomplete command of k dence of some analytical and cri source of source analytical and cri source of some analytical and cri source of source of source and source of source of source analytical and cri source of source of	STAT3910 or (FINA232 I of extensive knowledge ar abilities and logical thinking, y liar and unfamiliar situation of knowledge and skills requi- tical abilities and logical thin ational and presentational skills nowledge and skills require tical abilities and logical thin tional and presentational skills pe and skills required for atta but with limited analytical and	22 and any Univer Examination d skills required for a with evidence of origina s. Apply highly effect uired for attaining at le king, and ability to applit uits, and ability to appli- s. aining some of the coud of critical abilities. Shoo	May attaining all the course al thought, and ability to tive organizational and east most of the course ly knowledge to familiar of the course learning ply knowledge to most trise learning outcomes.					
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 5 es CLO 6 as Pass or al Y 2nc A B C	stimate default corr sesss rating system ready enrolled in S sem Offer in 20 Demonstrate thoroug learning outcomes. S apply knowledge to presentational skills. Demonstrate substar learning outcomes. S and some unfamiliar Demonstrate genera outcomes. Show evi familiar situations. Ap Demonstrate genera Show evidence of so knowledge to solve p Demonstrate little or of analytical and critic	elations STAT3618 or STAT3905 or 17 - 2018 : Y gh mastery at an advanced leve show strong analytical and critical a wide range of complex, fam ntial command of a broad range show evidence of analytical and cri situations. Apply effective organizal but incomplete command of k dence of some analytical and cri pup Imited command of knowledg me coherent and logical thinking,	STAT3910 or (FINA232 I of extensive knowledge ar abilities and logical thinking, v liar and unfamiliar situation of knowledge and skills require tical abilities and logical thin ational and presentational skil nowledge and skills required tical abilities and logical thin tional and presentational skills required for atta but with limited analytical and ffective organizational and pr yledge and skills required for ninking. Show very little or no	22 and any Univer Examination d skills required for a with evidence of origina is. Apply highly effect uired for attaining at le king, and ability to appli lis. d for attaining most of king, and ability to ap is. attining some of the courd d critical abilities. Show esentational skills.	May attaining all the course al thought, and ability to tive organizational and east most of the course ly knowledge to familiar of the course learning oply knowledge to most rise learning outcomes. w limited ability to apply earning outcomes. Lack					
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	CLO 5 es CLO 6 as Pass or al Y 2nc A B C D Fail	stimate default corr sesss rating system ready enrolled in S sem Offer in 20 Demonstrate thoroug learning outcomes. S apply knowledge to presentational skills. Demonstrate substar learning outcomes. S and some unfamiliar Demonstrate genera outcomes. Show evi familiar situations. Ap Demonstrate genera Show evidence of so knowledge to solve p Demonstrate little or of analytical and critic	elations STAT3618 or STAT3905 or 17 - 2018 : Y gh mastery at an advanced levelow show strong analytical and critical a wide range of complex, fam ntial command of a broad range show evidence of analytical and cri situations. Apply effective organizal but limited command of knowledge me coherent and logical thinking, roblems. Apply limited or barely en no evidence of command of knowledge me coherent and logical thinking, roblems. Apply limited or barely en no evidence of command of knowledge the strong and strong of command of knowledge the strong at the strong of command of knowledge the strong of command of the strong of command of knowledge the strong of knowledge the strong o	STAT3910 or (FINA232 I of extensive knowledge ar abilities and logical thinking, v liar and unfamiliar situation of knowledge and skills require tical abilities and logical thin ational and presentational skil nowledge and skills required tical abilities and logical thin tional and presentational skills required for atta but with limited analytical and ffective organizational and pr yledge and skills required for ninking. Show very little or no	22 and any Univer Examination d skills required for a with evidence of origina is. Apply highly effect uired for attaining at le king, and ability to appli lis. d for attaining most of king, and ability to ap is. attining some of the courd d critical abilities. Show esentational skills.	May attaining all the course al thought, and ability to tive organizational and east most of the course ly knowledge to familiar of the course learning oply knowledge to most rise learning outcomes. w limited ability to apply earning outcomes. Lack					

Course Teaching	Lectures			36				
& Learning Activities	Tutorials			12				
	Reading / Self study			100				
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping				
	Assignments	Coursework (assignments, tutorials, and class test(s))	40	CLO 1,2,3,4,5,6				
	Examination	One 2-hour written examination	60	CLO 1,2,3,4,5,6				
reading and online materials	tutorials, and class test(s))							
	Hull, J. C. (2012). Risk Manage Hull, J. C. (2012). Options, Futt Gujarati, D. N. and Porter, D. C	ement and Financial Institutions (3rd Edi ures, and Other Derivatives (8th Edition) 2. (2009). Basic Econometrics (5th Editic 009). Active Credit Portfolio Managemer	tion). Wiley. . Prentice Hall. n). McGraw-Hill.					

STAT4608	Market I	risk analysis (6 cr	edits)	Academic Year	2016			
Offering Department	Statistics	& Actuarial Science		Quota				
Course Co-ordinator	Dr Z Zhar	ng, Statistics & Actuar	ial Science (zhangz08@hku.hk)					
Teachers Involved	Dr Z Zhar	or Z Zhang, Statistics & Actuarial Science						
Course Objectives	methods	inancial risk management has experienced a revolution in the last decade thanks to the introduction of ne lethods for measuring risk, particularly Value-at-Risk (VaR). This course introduces modern risk management echniques covering the measurement of market risk using VaR models and financial time series models, and rese testing						
Course Contents & Topics	factor ma	Risk Measures; Value-at-Risk (VaR) models (parametric, Monte Carlo simulation and Historical simulation); Risi actor mapping; Advanced VaR models (GARCH-type models, extreme-value theory and normal-mixture); Principa Component Analysis and VaR; Backtesting and stress testing.						
Course Learning	On succe	ssful completion of thi	is course, students should be able to:					
Outcomes	CLO 1	understand VaR a	and expected shortfall as risk measures					
	CLO 2	compute VaR and	d expected shortfall					
	CLO 3	model volatility us	sing GARCH-type models					
	CLO 4	understand extrem	me-value theory					
	CLO 5	understand backt	esting and stress testing					
Pre-requisites (and Co-requisites and Impermissible combinations)		TAT3907 and STAT3 TAT4601 and (FINA2						
Offer in 2016 - 2017	Y 2nd	d sem Offer in 2017	- 2018 : Y	Examination	May			
Grade Descriptors (A+ to F)	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 cours learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familia 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	of analytical and critical a	evidence of command of knowledge and skills re abilities, logical and coherent thinking. Show very tational skills are minimally effective or ineffective	little or no ability to apply know				
Course Type	Lecture-b	ased course						
Course Teaching	Activitie	S	Details		No. of Hours			
& Learning Activities	Lectures				36			
	Tutorials				12			
	Reading	/ Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	40	CLO 1,2,3,4,5			
	Examinat	tion	One 2-hour written examination	60	CLO 1,2,3,4,5			
Required/recommended reading and online materials	Alexande Alexande Alexande Tsay, R. S	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.h	ku.hk						
STAT4711	Canstor	o experience for	actuarial science undergraduate	es (6 Academic Year	•			

Offering Department	Statistics	& Actuarial Science	e	Quota	50			
Course Co-ordinator	Prof W K	Li, Statistics & Actu	arial Science (saas@hku.hk)					
Feachers Involved	Prof W K	Li, Statistics & Actu	arial Science					
Course Objectives	problems years. It a students	This project-based course aims to provide students with capstone experience to formulate and investigate practica 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 project. S superviso	I teaching will be g Students will work r. Students are red	iven for this course. Students a in groups of four or five und	are expected to devote 120-140 der the supervision of a teach in their work two to three weeks ester.	er and/or an industi			
	as life ins also enco industry s to actuaria	urance, pension, f uraged to suggest upervisor. All topic al science.	nance, investment, enterprise r topics in non-traditional actuaria s for this course will be subject t	to any of the traditional actuarial risk management and general in I areas provided they can find a s to final approval by the Departme project, conduct market resear	surance. Students ar suitable teacher and/c int to ensure relevance			
	activities r	related to the topic,	and make suggestion on a solu	tion of the problem identified in the	0 0			
Course Learning Outcomes	CLO 1 de			able to: ced by different stakeholders,	and design workable			
	CLO 2 integrate theoretical results and practical approaches, and to specify limitations of current developments CLO 3 work in a team and to collaborate with members with different background							
	CLO 4 deliver actuarial results effectively in a written report and in oral presentations CLO 5 develop further logical, critical thinking, creativity, technical report writing, communication and consultation skills							
	CLO 6 ex			es of actuarial science as appl	lied to problems in a			
Pre-requisites (and Co-requisites and Impermissible combinations)	programm Pass in S This caps STAT479	ne including (Pass i TAT3909, or alread tone course is onl 8.	n STAT3901, or already enrolled ly enrolled in this course); and y for BSc(Actuarial Science) st	udents, and is mutually exclusiv				
			allowed to take this capstone co					
Offer in 2016 - 2017			Offer in 2017 - 2018 : Y	Examination				
Grade Descriptors (A+ to F)	Α	learning outcomes. S	how strong analytical and critical abilitie	xtensive knowledge and skills required s and logical thinking, with evidence of or nd unfamiliar situations. Apply highly e	riginal thought, and ability to			
	 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. Demonstrate every substantial command of a broad range of knowledge and skills required for attaining meet of the source learning outcomes. 							
	 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. 							
	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							
		Organization and pre	al abilities, logical and coherent thinking sentational skills are minimally effective	g. Show very little or no ability to apply kn or ineffective.	owledge to solve problems			
Course Type		ased course						
Course Teaching	Activities		Details		No. of Hours			
& Learning Activities	Reading	/ Self study	Tutorials, group work/pro	ject, reading/self-study	120			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Oral presentation		oral presentation, progre	ess and 45				
	Oral pres	entation	attendance	45	CLO 1,2,3,4,5,6			
	Research		attendance written report	55	CLO 1,2,3,4,5,6 CLO 1,2,3,4,5			

STAT4767	Actuari	al science internship (6 credits)	Academic Year	2016		
Offering Department	Statistics	& Actuarial Science	Quota			
Course Co-ordinator	Dr L F K	Ng, Statistics & Actuarial Science (flouisng@hku.hk)				
Teachers Involved	Various t	eachers as the assessors of oral presentations and written reports, S	atistics & Actuarial	Science		
Course Objectives		rse is offered to actuarial science students who take on an 6-month is for a student to complete this course as a project based on his/he		ar internships. The		
Course Contents & Topics	encounte	rse will include a written report which should emphasize importa ered by the student during his/her internship. In many situations, this student has been involved in during his/her internship.				
Course Learning	On succe	essful completion of this course, students should be able to:				
Outcomes	CLO 1	gain practical experiences during internship				
	CLO 2	describe basic actuarial practices learned during the internship				
	CLO 3	explain how actuarial theories learned in University can be applied in	n practice			
	CLO 4 provide context for specific technical skills developed in basic actuarial courses					
Pre-requisites (and Co-requisites		at least 24 credits of advanced level disciplinary core/elective ne including STAT3901; and	courses in BSc(Actuarial Science)		

and Impermissible	This capstone course is only for BSc(Actuarial Science) students; and is mutually exclusive with STAT4711.							
combinations)	The earlie	earliest that a student is allowed to take this capstone course is their year 3 study.						
Offer in 2016 - 2017	Y 1st	sem 2nd sem O	offer in 2017 - 2018 : Y	Examination	No Exam			
Grade Descriptors (Pass/Fail)	Pass	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	by supervisor(s). Fails	ty to solve problems in the workplace. Fails to ha to establish effective collaboration or communica the requirements set out in the Course Descripti or(s), etc.	tion with supervisor(s), other co	lleagues, or clients in the			
Course Type	Internship)						
Course Teaching	Activities		Details	Details				
& Learning Activities	Internship	it is expected that students are to work at least 6 months or 120 working days		960				
Assessment Methods and Weighting	Methods	i	Details Weighting in final course grade (%)		Assessment Methods to CLO Mapping			
	Oral pres	entation	oral presentation and in-class discussion	40	CLO 1,2,3,4			
	Written re	eport	written report	60	CLO 1,2,3,4			
Course Website	moodle.hl	ku.hk	i i i i i i i i i i i i i i i i i i i					
Additional Course Information	employer/ Satisfacto be record interested Enrolmen	moodle.hku.hk Despite no weighting for this assessment component, the completion of the employer's evaluation form employer/direct supervisor is required for passing the course. Satisfactory completion of this course can be counted towards the Capstone requirement. Details of interns be recorded on the student's transcript. This course will be assessed on "Pass/Fail" basis. Students we 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 throu relevant Department/School office after approval has been obtained from the course coordinator.						

STAT4798	Statistic	cs and actuarial sci	ience p	project (6 credi	its)	Academic Y	ear 2016		
Offering Department		& Actuarial Science	-		-	Quota	50		
Course Co-ordinator		S Lee, Statistics & Actu							
Feachers Involved	Various te	eachers as the assesso	ors of or	al presentations a	nd written	reports, Statistics & Actu	arial 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 pr	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		ssful completion of this							
Dutcomes	CLO 1 f	formulate meaningful re	esearch	problems		statistics to solve real life	problems		
				• •			problems		
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in programm Pass or a and This caps This cour	CLO 3 summarize and present research findings in a professional manner Pass in at least 24 credits of advanced level disciplinary core/elective courses in BSc(Actuarial Science programme including STAT3902 and STAT3907; and Pass or already enrolled in at least one of the following courses: STAT3616, STAT3911, STAT4601, STAT4602 and This capstone course is only for BSc(Actuarial Science) students; and subject to the consent of course coordinator. This course is mutually exclusive with STAT4711.							
		est that a student is allo			e course is				
Offer in 2016 - 2017		t sem 2nd sem Offe				Examination			
Grade Descriptors (A+ to F)	A	original thought. Insightful to quote/reference aptly.	use and Critical us tational s	critical analysis / evalu e of data and results	to draw app	and critical abilities and logica mation drawn from a full range propriate and insightful conclus siderable additional work beyo	of high quality sources ar sions. Apply highly effective		
	В	Demonstrate substantial grasp of the subject. Evidence of analytical and critical abilities and logical thinking. Critical use relevant information from sources, showing ability to make meaningful comparisons between different secondary interpretati and to quote/reference aptly. Correct use of data of results to draw appropriate conclusions. Apply effective organizational presentational skills.							
	С	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								
	Fail	Demonstrate evidence of analytical and critical abil	little or lities, logi d results	no grasp of the know cal and coherent think	rledge and u king. Limited	nderstanding of the subject. use of secondary sources ar e conclusions. Organization a	d no critical comparison		
Course Type	Project-ba	ased course							
Course Teaching	Activitie	s	Deta	ils			No. of Hours		
& Learning Activities	Reading	/ Self study					120		
Assessment Methods and Weighting	Methods	3	Deta	ils		Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Oral pres	sentation		presentation & ssion	in-class	40	CLO 1,2,3		
	Research	h report	writte	en report		60	CLO 1,2,3		
Course Website	moodle.h	moodle.hku.hk Approval is subject to past academic performance.							

STAT4901		eory II (6 credits)		Academic Yea	r 2016				
Offering Department		& Actuarial Science		Quota					
Course Co-ordinator Teachers Involved		oo, Statistics & Actua	rial Science (jkwoo@hku.hk)						
Course Objectives			burse in risk theory which extends various	topics discussed in ST	AT3906 It discusse				
			egate claims process, and related topics.		110000. 11 0100000				
Course Contents		Utility theory; discrete ruin model; compound Poisson risk model; ruin probability; reinsurance; adjustment							
& Topics	coefficient; Lundbergs inequality; Tijms approximation; non-homogeneous birth process; conta Poisson process; inflation model; IBNR (Incurred But Not Reported) claims; mixed Erlang dist moments; equilibrium distributions.								
Course Learning			ions. his course, students should be able to:						
Course Learning Dutcomes			ry including some commonly used utility	functions lensens iner	nuality risk aversio				
		nd utility maximization			quality, non avoioio				
			ntinuous ruin models						
			nt coefficient, Lundbergs inequality and 1		uin theory				
			of reinsurance and change of parameters						
			geneous birth process and its application						
			sson process and its applications includin between stop-loss moments and equilibr		a the IBINK model				
Pre-requisites	Pass in S		between stop-loss moments and equilibri						
and Co-requisites	1 433 11 0	1415500							
and Impermissible									
combinations)									
Offer in 2016 - 2017		d sem Offer in 2017		Examination	May				
Grade Descriptors	Α	Demonstrate thorough	mastery at an advanced level of extensive know w strong analytical and critical abilities and logical	vieage and skills required for thinking, with evidence of original	r attaining all the cours				
(A+ to F)		apply knowledge to a	wide range of complex, familiar and unfamiliar						
	D	presentational skills.	al command of a broad range of knowledge and s	kills required for attaining at	least most of the cours				
	В	learning outcomes. Sho	ow evidence of analytical and critical abilities and lo	gical thinking, and ability to ap					
	С		uations. Apply effective organizational and presenta out incomplete command of knowledge and skill		t of the course learning				
	C								
		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 outcom Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to ap							
	5 -11	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								
	L		ntational skills are minimally effective or ineffective						
Course Type		ased course							
Course Teaching & Learning Activities	Activities	5	Details		No. of Hours				
a Learning Activities	Lectures Tutorials				36 12				
		/ Self study			100				
Assessment Methods	Methods	· · · ·							
and Weighting				course grade (%)	Assessment Methods				
					to CLO Mapping				
	Assignme	ents	Coursework (assignments,	25	CLO 1,2,3,4,5,6				
	Evaminat	tutorials, and a class test)			CLO 1,2,3,4,5,6				
Required/recommended			One 3-hour written examination Willmot G.E.: Loss Models: From Data						
reading and	edition).		Willind G.L. Loss Models. I for Data		y & 30113, 2007, 3				
online materials		Goovaerts M., Dhaer	ne J., & Denuit M.: Modern Actuarial Risk	Theory (Springer, 2004	, 1st edition).				
			ickman J.C. & Jones D.A.: Actuarial Ma						
	edition).								
		j.E. & Lin X.S.: Lu , 2000, 1st edition).	undberg Approximations for Compound	Distributions with Ins	surance Application				
Course Website	moodle.hk	, , ,							
oouise website	mooule.m	Ku.HK							
STAT4902		d topics in actuar	rial science (6 credits)	Academic Yea	r 2016				
• • • • • • • • • • • • • • • • • • • •	Selected	Quota							
		Statistics & Actuarial Science Quota TBC, Statistics & Actuarial Science ()							
Offering Department Course Co-ordinator	Statistics TBC, Stat	tistics & Actuarial Sci	v v						
Offering Department Course Co-ordinator Teachers Involved	Statistics TBC, Stat TBC, Stat	tistics & Actuarial Sci tistics & Actuarial Sci	ence						
Offering Department Course Co-ordinator Teachers Involved	Statistics TBC, Stat TBC, Stat This cours	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c	ence of actuarial science which discuss	•					
Offering Department Course Co-ordinator Teachers Involved Course Objectives	Statistics TBC, Stat TBC, Stat This cours students	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f	ence	•					
Offering Department Course Co-ordinator Teachers Involved Course Objectives	Statistics TBC, Stat TBC, Stat This cours students application	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It t ns.	ence ourse in actuarial science which discuss focuses on tools that are in the front	•					
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents	Statistics TBC, Stat TBC, Stat This cours students application The conte Coherent	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen fr risk measures; Prer	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: nium calculation principles; Copulas; Ex	er of actuarial science	e with examples of				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents	Statistics TBC, Stat TBC, Stat This cours students application The conte Coherent	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen fr risk measures; Prer	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics:	er of actuarial science	e with examples o				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents	Statistics of TBC, Stat TBC, Stat TBC, Stat This cours students application The conte Coherent Ordering of Comonoto	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: nium calculation principles; Copulas; Ex uations with insurance applications; Relia dependency; Phase-type distributions; A	treme value theory; St ability properties; Gener	e with examples of ochastic dominance alized linear mode				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics	Statistics of TBC, Stat TBC, Stat TBC, Stat This cours students application The conte Coherent Ordering of Comonoto topics as of	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Ex uations with insurance applications; Relia dependency; Phase-type distributions; A structor.	treme value theory; St ability properties; Gener	e with examples of ochastic dominanc alized linear model				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning	Statistics of TBC, Statistics of TBC, Statistics of TBC, Statistics of TBC, Statistics application of the context of the conte	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prei of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Ex uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to:	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominanc alized linear model				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning	Statistics of TBC, Stat TBC, Stat This cours students application The contee Coherent Ordering of Comonoto topics as of On succes CLO 1	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th understand the mati	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Exi- uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to: hematical tools useful for further research	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominance alized linear mode				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes	Statistics of TBC, Stat TBC, Stat TBC, Stat This cours students application The contee Coherent Ordering of Comonoto topics as of On succes CLO 1 CLO 2	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th understand the mati apply the tools to sci	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Ex uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to:	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominance alized linear mode				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes Pre-requisites	Statistics of TBC, Stat TBC, Stat This cours students application The contee Coherent Ordering of Comonoto topics as of On succes CLO 1	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th understand the mati apply the tools to sci	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Exi- uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to: hematical tools useful for further research	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominanc alized linear model				
Differing Department Course Co-ordinator Feachers Involved Course Objectives Course Contents & Topics Course Learning Dutcomes Pre-requisites and Co-requisites	Statistics of TBC, Stat TBC, Stat TBC, Stat This cours students application The contee Coherent Ordering of Comonoto topics as of On succes CLO 1 CLO 2	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th understand the mati apply the tools to sci	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Exi- uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to: hematical tools useful for further research	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominanc alized linear model				
Offering Department Course Co-ordinator Teachers Involved Course Objectives Course Contents & Topics Course Learning Outcomes	Statistics of TBC, Stat TBC, Stat TBC, Stat This cours students application The contee Coherent Ordering of Comonoto topics as of On succes CLO 1 CLO 2	tistics & Actuarial Sci tistics & Actuarial Sci se is an advanced c will find useful. It f ns. ents will be chosen frr risk measures; Prer of risks; Renewal eq onicity; Measures of determined by the in ssful completion of th understand the mati apply the tools to sci	ence ourse in actuarial science which discuss focuses on tools that are in the front om the following topics: mium calculation principles; Copulas; Exi- uations with insurance applications; Relia dependency; Phase-type distributions; A structor. his course, students should be able to: hematical tools useful for further research	er of actuarial science atreme value theory; St ability properties; Gener pplications to enterprise	e with examples of ochastic dominanc alized linear model				

Department of Statistics & Actuarial Science

Grade Descriptors (A+ to F)	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.							
	В							
	С	Demonstrate general but in outcomes. Show evidence	ncomplete command of know of some analytical and critical derately effective organization	ledge and skill abilities and lo	s required for attaining mos gical thinking, and ability to a			
	D	Show evidence of some coh	ted command of knowledge a herent and logical thinking, but s. Apply limited or barely effect	with limited ana	lytical and critical abilities. Sh			
	Fail	Demonstrate little or no evic of analytical and critical abili	lence of command of knowled ties, logical and coherent think onal skills are minimally effection	ge and skills rec ing. Show very l	uired for attaining the course ittle or no ability to apply know			
Course Type	Lecture-b	ased course						
Course Teaching	Activities		Details			No. of Hours		
& Learning Activities	Lectures					36		
	Tutorials					12		
	Reading / Self study					100		
Assessment Methods and Weighting	Methods		Details		Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignm	ents	Coursework (as tutorials and class test	signments, s))	40	CLO 1,2		
	Examina	tion			60	CLO 1,2		
Required/recommended reading and online materials	- Denuit M - Willmot (Springer - McNeil	 Kaas R., Goovaerts M., Dhaene J., & Denuit M.: Modern Actuarial Risk Theory (Springer, 2004, 1st Denuit M., Dhaene J., Goovaerts M., & Kaas R.: Actuarial Theory for Dependent Risks (Wiley, 2005 Willmot G.E. & Lin X.S.: Lundberg Approximations for Compound Distributions with Insurand (Springer, 2000, 1st edition). McNeil A.J., Frey R. & Embrechts, P.: Quantitative Risk Management: Concepts, Techniqu (Princeton University Press, 2005, 1st edition). 						
Course Website	moodle.h	, , ,	· · · · · · · · · · · · · · · · · · ·					

STAT4903	Actuari	al techniques for general insurance (6 credits)	Academic Year	2016			
Offering Department	Statistics	& Actuarial Science	Quota				
Course Co-ordinator	Dr L F K Ng, Statistics & Actuarial Science (flouisng@hku.hk)						
Feachers Involved	Dr L F K Ng, Statistics and Actuarial Science						
Course Objectives	liabilities be empha China. S	pose of this course is to develop knowledge of the basic te for general insurance. Application of the actuarial techniqu asized. The course also provides general knowledge on the tudents will acquire the fundamental concept on general and calculations.	es to resolve general insur general insurance markets	ance problems wi in Hong Kong an			
Course Contents & Topics	 Introdu Regula Regula Ratema Ratema Ratema Calcula Pure pi Loss R Rating Consid Statima Build a Reserv Consid Estima Apprais 	ral Insurance Markets in Hong Kong, Taiwan and PRC ction of general insurance markets tions on general insurance techniques for ratemaking read and use manual rate pages aking related to exposures aking related to premiums aking related to loss and loss adjustment expenses ate the underwriting expense provisions remium methods atio methods differential and relativities erations when selecting the final rates ating claim liabilities equirement nd analyze claim development triangles ing techniques lerations when estimating the claim liabilities te recoveries and unpaid claim adjustment expenses se and validation of the estimated results urrent topics Applications using predictive modeling in Gener	al Insurance				
Course Learning	0.	essful completion of this course, students should be able to:					
Outcomes	CLO 1	understand the feature and underlying risk of general insu	ance products				
	CLO 2 calculate the premium rate for basic general insurance products						
	CLO 3 estimate the claims liabilities for general insurance products						
Pre-requisites (and Co-requisites and Impermissible combinations)		STAT3906	-				
Offer in 2016 - 2017	Y 2n	d sem Offer in 2017 - 2018 : Y	Examination	May			
Grade Descriptors (A+ to F)	A	Demonstrate thorough mastery at an advanced level of extensive kn learning outcomes. Show strong analytical and critical abilities and logic apply knowledge to a wide range of complex, familiar and unfamili presentational skills.	owledge and skills required for a al thinking, with evidence of origina	attaining all the course al thought, and ability to			

Course Type	C D Fail	learning outcomes. Show ev and some unfamiliar situatio Demonstrate general but in outcomes. Show evidence familiar situations. Apply mo Demonstrate partial but limi Show evidence of some cot knowledge to solve problem Demonstrate little or no evic of analytical and critical abili	mmand of a broad range of knowledge and ridence of analytical and critical abilities and Ic ns. Apply effective organizational and present ncomplete command of knowledge and skil of some analytical and critical abilities and Ic derately effective organizational and presenta ted command of knowledge and skills require nerent and logical thinking, but with limited ans s. Apply limited or barely effective organizatio lence of command of knowledge and skills require ties, logical and coherent thinking. Show very onal skills are minimally effective or ineffective	ogical thinking, and ability to a ational skills. Ils required for attaining mos ogical thinking, and ability to tional skills. ed for attaining some of the c alytical and critical abilities. Sh nal and presentational skills. quired for attaining the course little or no ability to apply know	oply knowledge to familiar apply knowledge to most ourse learning outcomes. ow limited ability to apply learning outcomes. Lack
Course Teaching	Activitie		Details		No. of Hours
& Learning Activities	Lectures				36
	Tutorials	3			12
	Reading	J / Self study			100
Assessment Methods and Weighting	Method	S	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping
	Assignm	nents	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3
	Examina	ation	One 3-hour written examination	75	CLO 2,3
Required/recommended reading and online materials	2010 Werner,	G, and Modlin, C., Basic	l Claims Using Basic Techniques, C Ratemaking, Casualty Actuarial Soci		
Course Website	moodle.				
Additional Course Information	Procedu America 1980 Casualty Casualty Feldblun PCAS L	I Standard Board of the A res in Property/Casualty I n Academy of Actuaries C Actuarial Society Comm Insurance Ratemaking, C n, S., Personal Automobil XXXIII, 1996, pp. 190-256	committee on Risk Classification, Ris ittee on Ratemaking Principles, Stat Casualty Actuarial Society, May 1988 e Premiums: An Asset Share Pricing	k Classification Stateme tement of Principles Reg g Approach for Property	nt of Principles, June garding Property and -Casualty Insurance,

STAT7609	Researc	h methods in sta	atistics (6 credits)	Academic Year	2016				
Offering Department	Statistics &	& Actuarial Science		Quota					
Course Co-ordinator	Dr J F Xu,	r J F Xu, Statistics & Actuarial Science (xujf@hku.hk)							
Teachers Involved	Dr J F Xu, 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 statistica techniques and their underlying theory.								
Course Contents & Topics	Contents n 1. Basic a theorems; 2. Parame signed like 3. Nonpara density est 4. Comput 5. Robust n 6. Sequent 7. Model s 8. Other to	nay be selected fror asymptotic methods delta method; Edge tric and nonparame elihood ratio statistica ametric statistical in timation; kernel mett ationally-intensive n methods: measures tial analysis: sequer election using inforr opics as determined	n: s: modes of convergence; stoch worth expansions; saddlepoint ap tric likelihood methods: high-order s; empirical likelihood. aference: sign and rank tests; Ke hods. nethods: cross-validation; bootstra of robustness; M-estimator; L-es ntial probability ratio test; sequenti- nation criteria. by the instructor.	proximations. er approximations; profile likeliho olmogorov-Smirnov test; nonpar ap; permutation methods. dimator; R-estimator; estimating f al estimation.	od and its variants				
Course Learning Outcomes	CLO 1 c CLO 2 u CLO 3 a	CLO 2 understand the use of standard mathematical tools for conducting statistical research CLO 3 apply a variety of research tools to solve standard statistical problems							
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in ST	AT3600 or STAT39	07						
Offer in 2016 - 2017	Y 1st s	sem Offer in 2017	- 2018 : Y	Examination	Dec				
Grade Descriptors (A+ to F)	A	Demonstrate thorough learning outcomes. Sho apply knowledge to a presentational skills.	mastery at an advanced level of exten w strong analytical and critical abilities an wide range of complex, familiar and u	sive knowledge and skills required for d logical thinking, with evidence of origin infamiliar situations. Apply highly effect	al thought, and ability to tive organizational and				
	В	B Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowled and some unfamiliar situations. Apply effective organizational and presentational skills.							
	С								
	D Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcom Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to an knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.								
	Fail								
Course Type	Lecture-ba	ased course	· ·						

Course Teaching	Lectures				36			
& Learning Activities	Tutorials				12			
	Reading /	Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3,4			
	Examinat	ion	One 2-hour written examination	75	CLO 1,2,3,4			
Required/recommended reading and online materials	Efron, B. a Owen, A.E Shao, J. (*	and Tibshirani, R.J. 3. (2001). Empirical 1999). Mathematica	otic Theory of Statistics and Probability. S (1993). An Introduction to the Bootstrap. Likelihood. Chapman & Hall: Boca Raton I Statistics. Springer: New York. Nonparametric Statistics. Springer.	Chapman & Hall: New Yo	ork.			
Course Website	moodle.hk	ku.hk						
STAT7610	Advance	ed probability (6	credite)	Academic Year	2016			
Offering Department		& Actuarial Science	creatisy	Quota				
Course Co-ordinator			tuarial Science (jeffyao@hku.hk)	quota				
Teachers Involved	-	Yao, Statistics & Ac	u v <i>i</i>					
Course Objectives		,	oduction to measure theory and probal	nility. The course will fo	cus on some ha			
		in theoretical probal	bility which are important for students to					
Course Contents & Topics	functions,		pace, measure and probability, measur integration theory, characteristic function on, martingales.					
Course Learning		•	his course, students should be able to:					
Outcomes	CLO 2 lea an	arn the general con nd dominated conve	mental measure theory and probability the cept of integration, understand the mono rgence theorem pt of conditional expectation		em, Fatou's lemn			
			y knowledge of martingale					
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in ST	TAT3603 or STAT39	903					
Offer in 2016 - 2017	Y 1st	sem Offer in 2017	′ - 2018 : Y	Examination	Dec			
Grade Descriptors (A+ to F)	 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 appl 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. Lac of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems							
Course Type	Lecture-ba	Organization and prese ased course	entational skills are minimally effective or ineffective					
Course Teaching	Activities		Details		No. of Hours			
& Learning Activities	Lectures				36			
-	Tutorials				12			
	Reading /	/ Self study			100			
Assessment Methods and Weighting	Methods		Details	Weighting in final course grade (%)	Assessment Methods to CLO Mappin			
	Assignme	ents	Coursework (assignments, tutorials, and a class test)	50	CLO 1,2,3,4			
	Examinat	ion	One 2-hour written examination	50	CLO 1,2,3,4			
Required/recommended reading and online materials	New York,	, 2004, 2nd edition)	: Probability Essentials (Universitext, Spri pability Theory (Academic Press, 2001, 3	0 0				
Course Website	moodle.hk		submy moory (noudefine r 1633, 2001, 3	a callony				
	INCOULE.IIN							
CTAT7644	Commit	ational atationi-	(6 gradits)	Academic Year	2016			
STAT7611	-	ational statistics	o creaits)					
Offering Department Course Co-ordinator		& Actuarial Science n, Statistics & Actuar	rial Science (gyin@hku.hk)	Quota				
Teachers Involved		n, Statistics & Actuar	105 /					
Course Objectives	This cour computation	rse aims to give u onally-intensive me	undergraduate and postgraduate stude thods in statistics. It emphasizes the ro	le of computation as a	fundamental tool			
Course Contents & Topics	discovery in data analysis, of statistical inference, and for development of statistical theory and methods. Contents include: Numerical optimization and integration, EM algorithm and its variants, Simulation and I Carlo integration, Importance sampling and variance reduction techniques, Markov chain Monte Carlo me and Bootstrap methods.							

Course Learning Outcomes CLO 1 understand the importance of the technique for generating random variables in Bayesian st Carlo integration and bootstrapping methods								
	CLO 2 realize the advantages and disadvantages of the Newton-Raphson algorithm and the Fisher scoring algorithm and apply them to fit generalized linear models							
	CLO 3 ur	nderstand the esse	nce and basic principle of the EM-type a tion, and apply them to solve practical prol		e algorithms, realize			
	CLO 4 ap		thms to find the posterior mode and app		e Carlo methods to			
			hods to obtain estimated standard errors parametric and non-parametric cases	s of estimators and cor	fidence intervals of			
Pre-requisites (and Co-requisites and Impermissible combinations)	Pass in STAT3600 or STAT3907							
Offer in 2016 - 2017	Y 1st	sem Offer in 2017	7 - 2018 : Y	Examination	Dec			
Grade Descriptors (A+ to F)	A	learning outcomes. Sh	h mastery at an advanced level of extensive know now strong analytical and critical abilities and logical t a wide range of complex, familiar and unfamiliar	hinking, with evidence of origi	nal thought, and ability to			
	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	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	of analytical and critical	to evidence of command of knowledge and skills rec al abilities, logical and coherent thinking. Show very l entational skills are minimally effective or ineffective.	ittle or no ability to apply know				
Course Type	Lecture-b	ased course						
Course Teaching	Activities	s	Details		No. of Hours			
& Learning Activities	Lectures							
	Tutorials							
	Reading	/ Self study			100			
Assessment Methods and Weighting	Methods	:	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping			
	Assignments		Coursework (assignments, practical work, and a term test)	50	CLO 1,2,3,4,5			
	Examination		One 2-hour written examination					
Required/recommended reading and online materials	Computat Givens, G	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) moodle.hku.hk							
Course Website		ادب اماد						

STAT7615	Advanc	ed quantitative risk management and finance (6 cr	redits) Academic Ye	ar 2016			
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	theory to	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	options a	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	On succe	essful completion of this course, students should be able to:					
Outcomes	CLO 1	apply Monte Carlo methods to determine the value of options	and other derivative se	curities			
	CLO 2	predict volatility of a set of securities using appropriate models	6				
	CLO 3	estimate the value-at-risk under extreme value theory					
Pre-requisites	Pass in S	5 A 4608					
Pre-requisites (and Co-requisites and Impermissible combinations)							
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017		d sem Offer in 2017 - 2018 : Y	Examination	Мау			
(and Co-requisites and Impermissible combinations)			wledge and skills required fithinking, with evidence of ori	or attaining all the course ginal thought, and ability to			
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Y 2n	d sem Offer in 2017 - 2018 : Y Demonstrate thorough mastery at an advanced level of extensive know learning outcomes. Show strong analytical and critical abilities and logical apply knowledge to a wide range of complex, familiar and unfamiliar	wledge and skills required f thinking, with evidence of ori situations. Apply highly ef skills required for attaining a bgical thinking, and ability to a	or attaining all the course ginal thought, and ability to fective organizational and at least most of the course			
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Y 2nd	d sem Offer in 2017 - 2018 : Y Demonstrate thorough mastery at an advanced level of extensive know learning outcomes. Show strong analytical and critical abilities and logical apply knowledge to a wide range of complex, familiar and unfamiliar presentational skills. Demonstrate substantial command of a broad range of knowledge and s learning outcomes. Show evidence of analytical and critical abilities and lo	wledge and skills required f thinking, with evidence of ori situations. Apply highly ef skills required for attaining a ugical thinking, and ability to a ational skills. Is required for attaining mo goical thinking, and ability to	or attaining all the course ginal thought, and ability to fective organizational and tt least most of the course apply knowledge to familiar but of the course learning			
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Y 2nd A B	d sem Offer in 2017 - 2018 : Y Demonstrate thorough mastery at an advanced level of extensive know learning outcomes. Show strong analytical and critical abilities and logical apply knowledge to a wide range of complex, familiar and unfamiliar presentational skills. Demonstrate substantial command of a broad range of knowledge and s learning outcomes. Show evidence of analytical and critical abilities and lo and some unfamiliar situations. Apply effective organizational and present Demonstrate general but incomplete command of knowledge and skill outcomes. Show evidence of some analytical and critical abilities and lo	wledge and skills required f thinking, with evidence of ori situations. Apply highly ef skills required for attaining a agical thinking, and ability to a ational skills. Is required for attaining mo ogical thinking, and ability to tional skills. ad for attaining some of the alytical and critical abilities. S	or attaining all the course ginal thought, and ability to fective organizational and it least most of the course apply knowledge to familiar out of the course learning apply knowledge to most course learning outcomes.			
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Y 2nd A B C	d sem Offer in 2017 - 2018 : Y Demonstrate thorough mastery at an advanced level of extensive know learning outcomes. Show strong analytical and critical abilities and logical apply knowledge to a wide range of complex, familiar and unfamiliar presentational skills. Demonstrate substantial command of a broad range of knowledge and a learning outcomes. Show evidence of analytical and critical abilities and lo and some unfamiliar situations. Apply effective organizational and present Demonstrate general but incomplete command of knowledge and skill outcomes. Show evidence of some analytical and critical abilities and lo familiar situations. Apply moderately effective organizational and present Demonstrate partial but limited command of knowledge and skills require Show evidence of some coherent and logical thinking, but with limited ana	wledge and skills required f thinking, with evidence of ori situations. Apply highly ef skills required for attaining a gical thinking, and ability to a ational skills. Is required for attaining mo ogical thinking, and ability to tional skills. d for attaining some of the alytical and critical abilities. S nal and presentational skills. quired for attaining the cours little or no ability to apply kno	or attaining all the course ginal thought, and ability to fective organizational and it least most of the course apply knowledge to familiar of the course learning apply knowledge to most course learning outcomes. show limited ability to apply e learning outcomes. Lack			
(and Co-requisites and Impermissible combinations) Offer in 2016 - 2017 Grade Descriptors	Y 2nd A B C D Fail	d sem Offer in 2017 - 2018 : Y Demonstrate thorough mastery at an advanced level of extensive know learning outcomes. Show strong analytical and critical abilities and logical apply knowledge to a wide range of complex, familiar and unfamiliar presentational skills. Demonstrate substantial command of a broad range of knowledge and s learning outcomes. Show evidence of analytical and critical abilities and lo and some unfamiliar situations. Apply effective organizational and present Demonstrate general but incomplete command of knowledge and skill outcomes. Show evidence of some analytical and critical abilities and lo familiar situations. Apply moderately effective organizational and present Demonstrate partial but limited command of knowledge and skills require Show evidence of some coherent and logical thinking, but with limited ana knowledge to solve problems. Apply limited or barely effective organization Demonstrate little or no evidence of command of knowledge and skills ree of analytical and critical abilities, logical and coherent thinking. Show very	wledge and skills required f thinking, with evidence of ori situations. Apply highly ef skills required for attaining a gical thinking, and ability to a ational skills. Is required for attaining mo ogical thinking, and ability to tional skills. d for attaining some of the alytical and critical abilities. S nal and presentational skills. quired for attaining the cours little or no ability to apply kno	or attaining all the course ginal thought, and ability to fective organizational and it least most of the course apply knowledge to familiar of the course learning apply knowledge to most course learning outcomes. show limited ability to apply e learning outcomes. Lack			

Course Teaching	Lectures			36		
& Learning Activities	Tutorials			12		
-	Reading / Self study			100		
Assessment Methods and Weighting	Methods	Details	Weighting in final course grade (%)	Assessment Methods to CLO Mapping		
	Assignments	Coursework (assignments, tutorials, and a class test)	25	CLO 1,2,3		
	Examination	One 2-hour written examination	75	CLO 1,2,3		
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	,,,,,				

<u>SECTION VII Degree Regulations</u>

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 fulltime 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.

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 138 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 138 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 0.1 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

See also General Regulations, pp. xx to xx

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.

'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

¹ These regulations are applicable to candidates admitted from 2016-17 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 2014-15 for the cohorts admitted in 2014-15 and 2015-16.)

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:

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

(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:
 - failed to complete successfully 36 or more credits in two consecutive semesters (not (i) 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 English² and 6 credits in an English in the Discipline course³; (b) successful completion of 6 credits in Chinese language enhancement⁴;
- (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 Inquirv⁵ with not more than 24 credits of courses 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 exempted must replace the number of exempted credits with courses of the same credit value.

(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.

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.

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.

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[°]:

Grade		Standard	Grade Point
A+	٦		4.3
А	}	Excellent	4.0
A-	J		3.7
B+	ſ		3.3
В	}	Good	3.0
B-	J		2.7
C+	ן		2.3
С	}	Satisfactory	2.0
C-	J		1.7
D+	l	Pass	1.3
D	ſ	1 455	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 divisions⁷: 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:

<u>Class of honours</u>	<u>CGPA range</u>
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 0.1 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.

SECTION VIII Teaching Weeks

Teaching Weeks 2016-2017 for Undergraduate and Taught Postgraduate Students

·	SUN	MON	TUE	WED	THUR	FRI	SAT	FIRST SE
		5		7	1	2	3	First Day o
SEP-16	4 11	5 12	6 13	7 14	8 15	9 [16]	10 17	
511-10	11	12	20	21	22	23	24	
	25	26	20	28	29	30	24	
							[1]	
	2	3	4	5	6	7	8	
OCT-16	9	[10]	11	12	13	14	15	
	16	17	18	19	20	21	22	Reading/ Fi
	23 30	24 31	25	26	27	28	29	
	50	51	1	2	3	4	5	
	6	7	8	9	10	11	12	
NOV-16	13	14	15	16	17	18	19	
	20	21	22	23	24	25	26	
	27	28	29	30	1	2	3	Last Day of Revision Pe
	4	5	6	7	8	2 9	10	Assessment
DEC-16	11	12	13	14	15	16	17	100000000000000000000000000000000000000
	18	19	20	21	22	23	(24)	
	25	[26]	[27]	28	29	30	<31>	
	1	[2]	3	4	5	6	7	
	8	9	10	11	12	13	14	SECOND
JAN-17	15	16	17	18	19	20	21	First Day of
	22 29	23	24	25	26	<27>		Class Suspe Jan 28 - Fel
	29	([30])	([31])	(1)	(2)	$\overline{3}$	4	Jali 20 - Fel
	5	6	7	8	9	10	11	
FEB-17	12	13	14	15	16	17	18	
	19	20	21	22	23	24	25	
	26	27	28				4	_
	5	6	7	1 8	2 9	3 10	4	Reading/ Fi
MAR-17	12	13	14	15	(16)	10	11	Reading/ 11
	19	20	21	22	23	24	25	
	26	27	28	29	30	31		
	_	_		_		_	1	
	2	3	[4]	5	6	7	8	
APR-17	9 16	10 [17]	11 18	12 19	13 20	[14] 21	[15] 22	
	23	24	25	26	20	28	22	Last Day of
	30							5
		[1]	2	[3]	4	5	6	Revision Pe
	7	8	9	10	11	12	13	Assessment
MAY-17	14	15 22	16 23	17	18	19 26	20	
	21 28	22	[30]	24 31	25	26	27	
	0	/	[20]	51	1	2	3	-1
	4	5	6	7	8	9	10	
JUN-17	11	12	13	14	15	16	17	
	18	19	20	21	22	23	24	<u>OPTIONA</u>
	25	26	27	28	29	30	[1]	Jun 26 - Au
	2	3	4	5	6	7	[1] 8	
	2 9	3 10	4	5 12	13	14	8 15	
JUL-17	16	17	18	12	20	21	22	
	23	24	25	26	27	28	29	
	30	31						
	_	7	1	2	3	4	5	
AUG-17	6 13	7 14	8 15	9 16	10 17	11 18	12 19	
AUG-1/	<u>13</u> 20	21	22	23	24	25	26	
	20	28	22	30	31	20	20	
<u> </u>			-		-			
[] General]	Holiday				Reading/ F	Field Trip	Week	
() Universit	ty Uolida-	(Eull Dard			Davisian D	lariad		
() Universi	ty Holiday	(Full Day)		Revision Period				
<> Univers	sity Holida	ıy (afternooi	n only)	\bigcirc	Class Susp	ension Per	riod for the I	lunar New Year

FIRST SEMESTER: SEP 1 - DEC 23, 2016	Week
First Day of Teaching: Sep 1, 2016	1
Thist Day of Teaching. Sep 1, 2010	2
	3
	4
	5
	U
	6
	7 (Reading)
Reading/ Field Trip Week: Oct 17 - 22, 2016	8
	9
	10
	10
	12
	13
Last Day of Teaching: Nov 30, 2016	
Revision Period: Dec 1 - 7, 2016	14 (Revision)
Assessment Period: Dec 8 - 23, 2016	1
	2
	3
	Break
	Break
SECOND SEMESTER: JAN 16 - MAY 27, 2017	Break
First Day of Teaching: Jan 16, 2017	1
Class Suspension Period for the Lunar New Year:	2
Jan 28 - Feb 3, 2017	
	2
	3 4
	4 5
	6
	0
Reading/ Field Trip Week: Mar 6 - 11, 2017	7 (Reading)
	8
	9
	10
	11
	12
	12
Last Day of Teaching: Apr 29, 2017	14
Revision Period: May 1 - 6, 2017	15 (Revision)
Assessment Period: May 8 - 27, 2017	1
	2
	3
	Break
	Break
	Break
OPTIONAL SUMMER SEMESTER	Break
Jun 26 - Aug 19, 2017	1
-	
	2
	3
	4
	5
	6
	7
	8

Assessment Period

Notes:

First Semester: 11 Mondays, 12 Tuesdays, Wednesdays and Thursdays, 11 Fridays and Saturdays Second Semester: 12 Mondays and Tuesdays, 13 Wednesdays, 12 Thursdays, 11.5 Fridays, and 12 Saturdays

Faculty of Science	Office Location	:	,
			Chong Yuet Ming Physics Building
	Tel	:	3917 2683
	Fax	:	2858 4620
	Email	:	science@hku.hk
	Website	:	http://www.scifac.hku.hk
			<u>www.scifac.hku.hk</u> for the latest ses, timetables, notices and forms)
Departments/School			
Biological Sciences	Website	:	http://www.biosch.hku.hk
Biomedical Sciences	Website	:	http://www.sbms.hku.hk
Chemistry	Website	:	http://www.chemistry.hku.hk
Earth Sciences	Website	:	http://www.earthsciences.hku.hk
Mathematics	Website	:	http://www.math.hku.hk
Physics	Website	:	http://www.physics.hku.hk
Statistics and Actuarial Science	Website	:	http://www.saasweb.hku.hk
Academic Advising Office	Tel	:	2219 4686
C C	Website	:	http://aao.hku.hk
Academic Services Office	Office Location		G04, Run Run Shaw Building
Academic Services Office		•	
	Tel	:	2859 2433
	Fax	:	2540 1405
	Email	:	asoffice@hku.hk
	Website	:	http://www.ase.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	Tel	:	2859 2305
Resources for Students (CEDARS)	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