City University of Hong Kong
Course Syllabus

offered by College/School/Department of _Mathematics_____
with effect from Semester __A____ 20_22_ / _23_

Part I Course Overview

Course Title:	**Introduction to Actuarial Science**
Course Code:	**MA4537**
Course Duration:	**One semester**
Credit Units:	**3 credit units**
Level:	**B4**
Proposed Area: *(for GE courses only)*	☐ **Arts and Humanities** ☐ **Study of Societies, Social and Business Organisations** ☐ **Science and Technology**
Medium of Instruction:	**English**
Medium of Assessment:	**English**
Prerequisites: *(Course Code and Title)*	**MA2506 Probability and Statistics; or** **MA2510 Probability and Statistics**
Precursors: *(Course Code and Title)*	**Nil**
Equivalent Courses: *(Course Code and Title)*	**Nil**
Exclusive Courses: *(Course Code and Title)*	**Nil**

Part II Course Details

1. Abstract

(A 150-word description about the course)

The course introduces fundamental concepts in actuarial science. It helps students understand the interest theory, life contingencies and life insurance and equips them with the knowledge to solve related problems in actuarial science

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs[#]	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	calculate basic quantities involving survival distributions and life tables.	20%	√		
2.	analyze schemes of life insurance and annuities.	30%		√	
3.	compare and contrast mathematically various strategies of life insurance and annuities.	15%		√	
4.	explain clearly basic concepts of survival distributions and characteristics of life tables.	15%	√		
5.	create and formulate actuarial models in evaluating premiums for term and life insurance.	20%			√
		100%			

** If weighting is assigned to CILOs, they should add up to 100%.*

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5		
Lectures	Learning through **teaching** is primarily based on lectures.	✓	✓	✓	✓	✓		39 hours in total
Take-home assignments	Learning through **take-home assignments** helps students understand concepts of interest and insurance, and calculate insurance-related items.	✓	✓	✓	✓	✓		after-class

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

30% Coursework

70% Examination (Duration: 3 hours, at the end of the semester)

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Tasks/Activities	CILO No.						Weighting*	Remarks
	1	2	3	4	5			
Continuous Assessment: _30___%								
Test	✓	✓	✓				20%	Questions are designed for the first part of the course to see how well the students have learned basic theory of interest, and survival distributions, as well as valuing securities.
Problem sets	✓	✓	✓	✓	✓		10%	The assignments provide students chances to demonstrate their achievements in actuarial science methods learned from this course.
Examination (duration: 3 hrs)	✓	✓	✓	✓	✓		70%	Examination questions are designed to see how far students have achieved their intended learning outcomes.
** The weightings should add up to 100%.*							100%	

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Test	Essential	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Problem sets	Essential	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Examination	Main	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Life insurance, premium, interest rate, survival distributions, life tables, life annuities.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Fundamentals of Actuarial Mathematics, 3rd Edition, S. David Promislow, 2015, Wiley
2.	Title: Actuarial Mathematics Authors: Newton L. Bowers, Hans U. Gerber, James C. Hickman, Donald A. Jones, Cecil J. Nesbitt Publisher: Society of Actuaries; 2nd edition, 1997
3.	
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2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	
2.	
3.	
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