

Subject Description Form

Subject Code	AMA537
Subject Title	Advanced topics in Actuarial Science
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: AMA 533 Life Contingencies
Objectives	This subject is to provide students with an overview of various advanced topics in actuarial science, including more sophisticated theory and applications in life contingencies and pension mathematics.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) apply the concept of reserves and conduct their analysis; (b) formulate the joint life status models and to calculate the corresponding insurances and premiums; (c) construct and analyze multiple decrement table; (d) manage risks in insurance and financial industries.
Subject Synopsis/ Indicative Syllabus	<p><i>Benefit reserves:</i> Fully continuous and discrete benefit reserves, analysis of benefit reserves, benefit reserves at fractional durations, allocation of the risk to insurance years, expense-loaded premiums.</p> <p><i>Insurance models including expenses:</i> Expense augmented models, types of expenses, asset shares.</p> <p><i>Multiple life functions:</i> Joint-life status and last-survivor status, dependent life models, insurance and annuity benefits, special mortality assumptions.</p> <p><i>Multiple decrement models:</i> Random and deterministic survivorship groups, multi-life models, multiple decrement models.</p>
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorial classes. The lectures will be conducted to introduce the concepts of various advanced methods in actuarial science in the syllabus, which are reinforced by learning activities involving demonstration, example classes, assignments and exercises.

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	d
	1. Assignments	20%	✓	✓	✓	✓
	2. Tests	20%	✓	✓	✓	
	3. Examination	60%	✓	✓	✓	✓
Total	100 %					
Continuous Assessment comprises of tests and assignments. A written examination is held at the end of the semester.						
Student Study Effort Required	Class contact:					
	▪ Lecture		26 Hrs.			
	▪ Seminar/Tutorial		13 Hrs.			
	Other student study effort:					
	▪ Assignment/Mini-project		35 Hrs.			
	▪ Self Study		63 Hrs.			
	Total student study effort		137 Hrs.			
Reading List and References	Bowers, N. L., Gerber, H. U., Hickman, J. C., Jones, D. A., and Nesbitt, C. J.	Actuarial Mathematics, 2nd Edition	Society of Actuaries, 1997			
	Broverman, Samuel	Study Guide for the Society of Actuaries Exam MLC, 2016 Edition (Vol. 1 & Vol. 2)	©S. Broverman, 2016			
	Gerber, H. U.	Life Insurance Mathematics, 3rd Edition	Springer, 1997			
	Jordan, C. W.	Life Contingencies, 2nd Edition	Society of Actuaries, 1967			