Subject Description Form

Subject Code	AMA272
Subject Title	Mathematical Models for Risk Management
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisites: Inferential Statistics (AMA237) or Basic Statistics (AMA261) or Probability & Distributions (AMA269 or AMA2691)
Objectives	To provide students with wide knowledge of insurance and risk models and enable them to apply the probability models to solve problems in insurance and manage risks.
Intended Learning Outcomes	Upon satisfactory completion of the subject, students should be able to: 1. construct probability models for assessing risks; 2. command the knowledge and techniques in modeling and calculating the probability and related measures for actuarial science problems; 3. apply the acquired knowledge and techniques to assess probabilities for stochastic situations in actuarial science problems.
Subject Synopsis/ Indicative Syllabus	*Discrete distributions*: Binomial, hyper-geometric, Poisson, geometric, negative binomial, uniform. *Continuous distributions*: Uniform, exponential, gamma, normal, lognormal, Pareto, Weibull, beta. *Applications*: Loss and insurance, expected value of a loss or claim, hazard rate and survival function, conditional distribution of a loss, individual risk model, aggregate claims, normal approximation, excess-of-loss insurance, reinsurance.
Teaching/Learning Methodology	The learning outcomes will be achieved through a combination of lectures, tutorials, interactions between the lecturers and students, assignments, tests and the final examination.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)		
		1	2	3
a. Assignments/Quizzes	10%		✓	✓
b. Tests	30%		✓	✓
c. Examination	60%	✓	✓	✓
Total	100 %			

	The learning outcomes will be assessed by a combination of assignments, mid-term tests and the final examination.	
	To pass this subject, students are required to obtain Grade D or above in **both** the Continuous Assessment and the Examination components.	
Student Study Effort Required	Class contact:	
	▪ Lecture	28 Hrs.
	▪ Tutorial	14 Hrs.
	Other student study effort:	
	▪ Assignment	7 Hrs.
	▪ Self-study	21 Hrs.
	Total student study effort	70 Hrs.
Reading List and References	Textbook:	

Reading List and References section:

Textbook:

Bean, M.	Probability: The Science of Uncertainty with Applications to Investments, Insurance, and Engineering	Brooks/Cole, Pacific Grove, California, 2001

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
Hassett, M.J. and Stewart, D.G.	Probability for Risk Management	ACTEX Publications, 1999
Broverman, S.A.	ACTEX Study Manual, Course 1	ACTEX Publications, 2004