Subject Description Form

Subject Code	AMA2691
Subject Title	Probability & Distributions
Credit Value	3
Level	2
Pre-requisite	Calculus and Linear Algebra (AMA1007) or Basic Mathematics II – Calculus and Linear Algebra (AMA1120) or Calculus for Engineers (AMA1130) or Calculus (AMA1131) or Foundation Mathematics for Accounting and Finance (AMA1500) or Calculus (AMA1702) or equivalent
Objectives	This subject is to provide students with basic probability theory and enable them to apply it in investment science. In particular, the students are to become familiar with various families of probability distributions and their properties.
Intended Learning Outcomes	Upon satisfactory completion of the subject, students should be able to: 1. develop the concepts of probability theory and random variables; 2. construct probability models in situations with uncertainty; 3. get familiar with various families of discrete and continuous distributions; 4. calculate probabilities, moments and other related quantities based on given distributions; 5. apply the acquired knowledge and techniques in probability and distribution theories to deal with problems in investment science.
Subject Synopsis/ Indicative Syllabus	*Probability (6 hours)* Sample space, events, probability, conditional probability, independence, Bayes theorem. *Random variables and distributions (24 hours)* Random variables, independence of random variables; probability distributions: probability, density and cumulative distribution functions, various families of discrete and continuous distributions; expectation and variance, moments and moment-generating function; joint, marginal and conditional distributions; transformation of random variables. *Sampling theory (9 hours)* Sampling distributions, normal, t, chi-square and F distributions.
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorials. The lectures will be conducted to introduce the basic probability and distributions concepts in the syllabus, which are then reinforced by learning activities involving demonstration, tutorial exercise and assignments.

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
			1	2	3	4	5
	1. Assignments	10%	✓	✓	✓	✓	✓
	2. Tests	30%	✓	✓	✓	✓	✓
	3. Examination	60%	✓	✓	✓	✓	✓
	Total	100 %					

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

The subject focuses on knowledge, skills and understanding of **Probability & Distributions**, thus, **Exam-based assessment** is the most appropriate assessment method, including 60% examination. Continuous Assessment comprises of individual assignments (10%) and test (30%) are included so as to keep the students in progress. A written examination is held at the end of the semester.

Student Study Effort Expected	Class contact:	
	• Lecture	26 Hrs.
	• Tutorial	13 Hrs.
	Other student study effort:	
	• Assignment	30 Hrs.
	• Self-study	48 Hrs.
	Total student study effort:	117 Hrs.

Reading List and References	Textbook		
	Hogg, R.V., Tanis, E. & Zimmerman D.L.	Probability and Statistical Inference 9th edition or above	Pearson 2015
		Or an equivalent (introductory) textbook on mathematical statistics	
	Reference		
	Ross S.M.	A First Course in Probability 9th edition or above,	Pearson, 2014