

## Subject Description Form

<b>Subject Code</b>	AMA530
<b>Subject Title</b>	Mathematics of Finance
<b>Credit Value</b>	3
<b>Level</b>	5
<b>Pre-requisite/ Co-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	To enable students to understand mathematics of finance, in particular, the theory of interest.
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> <li>(a) Apply the concept to problems involving measures of interest.</li> <li>(b) Calculate interest or yield on investment or loan.</li> <li>(c) Evaluate basic annuities and general annuities.</li> <li>(d) Evaluate alternate loan repayment methods.</li> <li>(e) Apply the concept and measures of yield from investment.</li> <li>(f) Evaluate, compare and contrast investment strategies of bonds and securities.</li> </ul>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p>Interest - simple, compound, real, nominal, effective, forward, term structure; yield rate; capital/principal; loan; cash flow; equation of value; present value; future value; current value; net present value.</p> <p>Annuity functions, valuation of discrete and continuous payment streams, varying annuities.</p> <p>Determining equivalent measures of interest; discounting; accumulating; amortization; sinking funds; cash flow models for investment returns.</p> <p>Yield curves, spot rates, and forward rates and performs calculations using their relationships.</p> <p>Interest rate risk, immunization theory, duration, convexity and cash-flow matching algorithms.</p>
<b>Teaching/Learning Methodology</b>	The subject will be delivered mainly through lectures and tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of mathematical techniques and how the techniques can be applied to solving problems. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice.

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e	f
	1. Assignments	20%	✓	✓	✓	✓	✓	
	2. Mid-term test	20%	✓	✓	✓	✓	✓	✓
	3. Examination	60%	✓	✓	✓	✓	✓	✓
Total	100 %							
Continuous Assessment comprises of assignments and a mid-term test. A written examination is held at the end of the semester.								
<b>Student Study Effort Required</b>	Class contact:							
	▪ Lecture		26 Hrs.					
	▪ Tutorial		13 Hrs.					
	Other student study effort:							
	▪ Assignment/Mini-project		35 Hrs.					
	▪ Self-study		63 Hrs.					
	Total student study effort		137 Hrs.					
<b>Reading List and References</b>	Kellison, S. G.	The Theory of Interest, 3rd Edition	McGraw-Hill / Irwin, 2009					
	Broverman, S.A.	Mathematics of Investment and Credit, 4th Edition	ACTEX Publications, 2008					
	Luenberger, D.	Investment Science	Oxford University Press, 1998					