Subject Description Form

Subject Code	AMA530
Subject Title	Mathematics of Finance
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	To enable students to understand mathematics of finance, in particular, the theory of interest.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) Apply the concept to problems involving measures of interest. (b) Calculate interest or yield on investment or loan. (c) Evaluate basic annuities and general annuities. (d) Evaluate alternate loan repayment methods. (e) Apply the concept and measures of yield from investment. (f) Evaluate, compare and contrast investment strategies of bonds and securities.
Subject Synopsis/ Indicative Syllabus	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. Annuity functions, valuation of discrete and continuous payment streams, varying annuities. Determining equivalent measures of interest; discounting; accumulating; amortization; sinking funds; cash flow models for investment returns. Yield curves, spot rates, and forward rates and performs calculations using their relationships. Interest rate risk, immunization theory, duration, convexity and cash-flow matching algorithms.
Teaching/Learning Methodology	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.

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	e	f
1. Mini-project	10%	✓	✓	✓	✓	✓	
2. Class quiz	30%	✓	✓	✓	✓	✓	✓
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.

Student Study Effort Required

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.

Reading List and References

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