

Subject Description Form

Subject Code	AMA539
Subject Title	Financial Modeling
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: AMA528 Probability and Stochastic Models
Objectives	<p>To enable students to have a thorough understanding of financial modeling, their variations and their applications to financial policies.</p> <p>This module is designed to represent the performance of a financial asset or portfolio of a business, project, or any other investment. Students are expected to understand a comprehensive coverage of the basic concepts, theories, applications and decision-making rules for financial investments. Major topics cover the state-of-the-art knowledge and skills of computational methods for derivative pricing and hedging, financial model calibration and other aspects of investment and risk management with portfolio selections.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> (a) Apply the concepts and terminology of financial modeling and risk analysis. (b) Understand modern portfolio theory and its use in the investment management process. (c) Apply mathematical knowledge to value different financial securities including equity, bonds, and derivatives. (d) Understand the process of portfolio management and portfolio performance evaluation. (e) Apply stochastic processes to study multi-period mean-variance portfolio selection, continuous-time mean-variance and utility portfolio selections, optimal stopping in finance.
Subject Synopsis/ Indicative Syllabus	<p>Measure of return and risk; risk return trade-off; diversification and portfolio risk; optimal risky portfolios; asset allocation; risk-free lending and borrowing; separation property.</p> <p>Typical investment instruments; investment process; risk free assets; market indexes and benchmarks; short sales; investment companies.</p> <p>Capital Asset Pricing Model (CAPM); Arbitrage Pricing Theory (APT); Multi Factor Models; Valuation concepts and methods; valuation models such as dividend discount model; P/E based models.</p> <p>Single-period mean-variance portfolio selection, continuous-time mean-variance and utility portfolio selections, optimal stopping in finance.</p>
Teaching/Learning Methodology	<p>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 real problems. Students are encouraged to adopt a deep study approach by employing high level portfolio strategies,</p>

	such as mean-variance and utility models, 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
	1. Assignments		10%	✓	✓	✓	✓	✓
	2. Tests		30%	✓	✓	✓	✓	✓
	3. Examination		60%	✓	✓	✓	✓	✓
	Total		100 %					
Continuous Assessment comprises of assignments and tests. 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			38 Hrs.				
	▪ Self-study			60 Hrs.				
	Total student study effort			137 Hrs.				
Reading List and References	Zvi, B., Kane, A., and Marcus, A.J.	Essentials of Investments, 7th Edition	McGraw-Hill, 2007					
	Reilly, Frank K., and Edgar A.	Investments, 7th Edition	Thomson South-Western, 2006					
	Ho, S., Scott, R.H., and Wong, K.A.	The Hong Kong Financial System	Oxford University Press, 2004					
	Elton, E.J., Gruber, M.J., Brown, S.J., and Goetzmann, W.	Modern Portfolio Theory and Investment Analysis, 6th edition	Wiley, 2003					
	Luenberger, D.G.	Investment Science	Oxford University Press, 1998					
	Karatzas, I. and Shreve S.E.	Methods of Mathematical Finance	Springer 1999					