Subject Description Form

Subject Code	AMA 616
Subject Title	Statistics for Finance
Credit Value	3
Level	6
Expected background knowledge	A course in Statistical Analysis and a course in Advanced Calculus
Objectives	To give a comprehensive introduction into important ideas of financial mathematics and statistics for the modelling and statistical analysis of financial data.
Intended Learning Outcomes	Upon satisfactory completion of the subject, students should be able to: a. Gain a deep understanding of option pricing model and financial time series; b. Solve simple option pricing problems numerically; c. Carry out basic statistical analysis on financial data; d. Apply option pricing theory to model new financial products and various statistical models to model the financial time series.
Subject Synopsis/ Indicative Syllabus	*Option pricing theory* Derivatives, Arbitrage, Wiener process, binomial processes, geometric random walks, stochastic integrals, Ito's Lemma, Black-Scholes model, hedging. European options, Binomial model, Cox-Ross-Rubinstein approach. American options, arbitrage relationship, trinomial model, numerical techniques, applications

	Financial Time series analysis Econometric models, the random walk hypothesis, unit root test, ARIMA models. ARCH and GARCH models, Exponential GARCH, stochastic volatility, multivariate GARCH models, applications.
Teaching/ Learning Methodology	The subject will be delivered mainly through lectures and tutorials, which are then reinforced by learning activities involving demonstration, tutorial exercises and assignments.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
		a	b	c	d
1. CA	40%	✓	✓	✓	✓
2. Exam	60%	✓	✓	✓	✓
Total	100 %				

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

The subject focuses on knowledge, skill and understanding of **Statistics of Finance**, **Exam-based assessment** is the most appropriate assessment method, including tests and examination. Moreover, assignments are included as a component of continuous assessment so as to keep the students in progress.

Continuous Assessment comprises of assignments and tests. 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	36 Hrs.
	▪ Self-study	27 Hrs.
	Total student study effort	102 Hrs.
Reading List and References	J. Franke, W. Hardle and C.M. Hafner, Statistics of Financial Markets, 3rd Edition, 2012. P.J. Wilmott, Quantitiative Finance, John Wiley & Sons Ltd., 2007. J.C. Hull, Options, Futures , and Other Derivatives, 8th Edition, Prentice Hall, 2012. C. Chatfield, The Analysis of Time Series: an introduction, 6th Edition, Chapman & Hall/CRC, 2003. J.D. Cryer and K.S. Chan, Time Series Analysis with Applications in R, 2nd Edition, Springer, 2008. R.S. Tsay, Analysis of financial time series, 3rd edition, Wiley, 2010.	