Subject Code	AF5343
Subject Title	Quantitative Methods for Finance
Credit Value	3
Level	5
Duration	One Semester
Pre-requisite / Co-requisite/ Exclusion	Recommended Background Knowledge: Undergraduate level statistical analysis, quantitative analysis, and microeconomics.
Role and Purposes	This course covers the basic concepts and techniques of the classical econometrics, such as sampling theory, probability theory, hypothesis testing, regressions, etc. Considerable attention is devoted to finance applications of the concepts and techniques, so that we need to review basic financial mathematics. Some advanced statistical techniques will be briefly introduced. This course is also designed for those who wish to take the Chartered Financial Analysts (CFA) exams. This course helps achieve the MoF outcomes by enabling students to better understand conceptual frameworks drawn from quantitative methods related to economics and finance (outcome 1), to be able to explain real world economic and financial problems, and help them to better apply the tools to analyze and value real cases.
Subject Learning Outcomes	Upon completion of the subject, students will be able to: a. Develop a systematic understanding of fundamental statistic and econometric concepts and methodologies. b. Apply the concepts and methodologies to explain different problems related to finance and economics. c. Develop ability to resolve real world economic and finance problems by applying the methodologies to data analysis.
Subject Synopsis/ Indicative Syllabus	**Basic Financial Mathematics (Review)** Compounding and discounting; present value and future value calculations; annuities and perpetuities; dollar and time-weighted rate of return. **Basic Statistics Concepts** Types of statistical data; measures of central tendency and dispersion **Probability Concepts** Basic concepts of probability; random variables and probability; probability theorems; covariance and correlation; expected value and variance; probability distributions

<table>
<tr><td></td><td>Sampling and Estimation
Random sampling and sampling distributions; point and interval estimates; confidence intervals

Hypothesis Testing and Statistical Inference
The concepts of hypothesis testing; types of hypothesis testing; analysis of variance

Regression Analysis
Linear regression and correlation; multiple regression analysis</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>Concepts and techniques will be introduced through lectures. Students are required to apply the knowledge and skills to solving problems in the form of exercises and project. The use of relevant computer package is required.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td></td><td></td><td></td></tr>
<tr><td>1. Class Participation</td><td>10%</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>2. Homework</td><td>10%</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>3. Written Project</td><td>30%</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>4. Final Examination</td><td>50%</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="6"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

The Written Project should contain the following components:
• State and motivate clearly the finance issue you wish to address in your project.
• Make your issue stand out from the finance literature by offering a literature review.
• Convert your finance issue to one or two testable hypotheses.
• A discussion of the econometric model(s)/techniques you plan to use in your project.
• A brief discussion of the data you are using – data sources, definitions, transformation involved (if any), and limitations.
• A coherent analysis and discussion of your results.
• A conclusion outlining what you have achieved and the problems you have encountered.
• A bibliography properly documented.
• The whole report should be typed and well set out. You should include tables, graphs, etc. when necessary.</td></tr>
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	Note: To pass this subject, students are required to obtain Grade D or above in BOTH the Continuous Assessment and Examination components. In addition, the specific requirements on individual assessment components discussed above could be adjusted based on the pedagogical needs of subject lecturers.	
Student Study Effort Expected	Class contact:	
	Lectures / Seminars	39 Hrs.
	Other student study effort:	
	Reading materials/textbook and working on exercises, depending on each student's background.	78 Hrs.
	Total student study effort	117 Hrs.
Reading List and References	Quantitative Investment Analysis, by Richard Armand Defusco, Dennis W. McLeavey, Jerald E. Pinto, David E. Runkle, 3nd edition, John Wiley & Sons, Inc. Econometric Methods, 4th edition by Jack Johnston and John DiNardo Some additional readings will be distributed in class.	