COURSE DETAILS

Course Code: F79PA
Full Course Title: Portfolio Theory and Asset Models
SCQF Level: 9
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL

Undergraduate: Yes  Postgraduate Taught: Yes  Postgraduate Research: No

Additional Information:

COURSE AIMS

To introduce utility theory and asset pricing and portfolio selection models.

LEARNING OUTCOMES – SUBJECT MASTERY

- Derive the properties of a utility function.
- Calculate an investor's expected utility of an investment.
- State the conditions for absolute dominance, first and second order stochastic dominance. Show how first and second order stochastic dominances are related to utility theory. Demonstrate whether investments have dominance over each other.
- Calculate the following measures of risk: variance, semi-variance, shortfall probability, mean shortfall and Value-at-Risk (VaR).
- Calculate the mean and variance of return on a portfolio of assets. Describe the purpose and calculation of the following: opportunity set, efficient frontier, indifference curves, Lagrangian function and separation theorem.
- Describe the properties of single factor and multi factor models. Show how to fit a single index model using historic data.
- Discuss the assumptions and uses of the Capital Asset Pricing Model and Arbitrage Pricing Theory. Derive the capital market line and security market line. Derive the results of arbitrage pricing theory in the case of 2 factors.
- Describe the properties of specified multi-period asset models.
- Describe the basic principles of Behavioural economics and prospect theory.

LEARNING OUTCOMES – PERSONAL ABILITIES

- Demonstrate the ability to learn independently
- Manage time, work to deadlines and prioritise workloads
- Present results in a way that demonstrates that they have understood the technical and broader issues of portfolio theory and asset modelling.

SYLLABUS

- Utility theory
- Stochastic dominance
- Measures of investment risk
F79PA Portfolio Theory and Asset Models

- Portfolio theory
- Single-period models of asset returns
- Equilibrium models
- Efficient markets hypothesis
- Multi-period models of asset returns
- Behavioural economics

### COURSE RELATIONSHIPS

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<th>Course Code</th>
<th>Level</th>
<th>Title</th>
<th>School</th>
<th>Type</th>
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<td>Actuarial and Financial Mathematics B</td>
<td>School of Math and Comp Sci.</td>
<td>Pre-Requisite</td>
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<td>Probability and Statistics A</td>
<td>School of Math and Comp Sci.</td>
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<td>Derivative Markets and Discrete Time Finance</td>
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### LOCATION AND ASSESSMENT METHODS

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