



## Course information 2019–20

### FN3142 Quantitative finance

This course is aimed at students interested in obtaining a thorough grounding in market finance and related empirical methods.

#### Prerequisites

If taken as part of a BSc degree, courses which must be passed before this course may be attempted:

*EC2020 Elements of econometrics and EC2066 Microeconomics.*

#### Co-requisite

Students can only take *FN3142 Quantitative finance* at the same time as or after *FN3092 Corporate finance*, not before.

#### Aims and objectives

This course provides the econometric techniques, such as time-series analysis, required to analyse theoretical and empirical issues in finance. It provides applications in asset pricing, investments, risk analysis and management, market microstructure, and return forecasting.

#### Assessment

This course is assessed by a three-hour unseen written examination.

#### Learning outcomes

At the end of this course and having completed the essential reading and activities students should:

- ✓ To be able to demonstrate mastery of econometric techniques required in order to analyse issues in asset pricing and market finance
- ✓ To be able to demonstrate familiarity with recent empirical findings based on financial econometric models
- ✓ To understand and have gained valuable insights into the functioning of financial markets
- ✓ To understand some of the practical issues in the forecasting of key financial market variables, such as asset prices, risk and dependence.

#### Essential reading

For full details, please refer to the reading list

Christoffersen, P.F., *Elements of Financial Risk Management, Second Edition*. (Academic Press, London)

Diebold, F.X., *Elements of Forecasting, Fourth Edition*. (Thomson South-Western, Canada)

Students should consult the appropriate *EMFSS Programme Regulations*, which are reviewed on an annual basis. The *Regulations* provide information on the availability of a course, where it can be placed on your programme's structure, and details of co-requisites and prerequisites.



## Syllabus

This is a description of the material to be examined. On registration, students will receive a detailed subject guide which provides a framework for covering the topics in the syllabus and directions to the essential reading

Building on concepts introduced in course FN3092 Corporate finance and course EC2020 Elements of econometrics, this course will introduce students to some widely-used models used to study and forecast financial markets and familiarize them with the properties of financial data. Such data often comes in the form of time series, and thus much of the course will use methods from time series analysis. The models to be covered include autoregressive and ARMA models, GARCH models for volatility forecasting, and models using high frequency (intra-daily) asset prices. Students completing this course will have seen and applied many of the latest models used in financial econometrics and will understand some of the key features (both positive and negative) of these models.

Topics addressed by this course are:

- Concepts and measures of risk
- Time-series analysis
- Empirical features of financial asset returns
- Market risk models
- Models of financial market correlations
- Forecast evaluation methods
- Risk management
- Asset allocation decisions
- Market microstructure and high frequency data

This course is quantitative by nature. It aims however to investigate practical issues in the forecasting of key financial market variables and makes use of a number of real-world data sets and examples.