UNIVERSITY OF LONDON

# Course information 2023-24

# FN3142 Quantitative finance

## General information

**COURSE LEVEL:** 6

**CREDIT:** 30

**NOTIONAL STUDY TIME:** 300 hours

## Summary

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

## Conditions

**Prerequisite:** If taken as part of a BSc degree, the following course(s) must be attempted before you can register on this course.

- EC2020 Elements of econometrics **AND** EC2066 Microeconomics.

**Co-requisite:** Students can only take FN3142 Quantitative finance at the same time as, or after, the following courses, not before:

- FN2190 Asset Pricing and financial markets or FN2203 Principles of asset pricing

## 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.

## 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

Please consult the current EMFSS Programme Regulations for further information on the availability of a course, where it can be placed on your programme's structure, and other important details.

Christoffersen, P.F., Elements of Financial Risk Management (Academic Press, London, 2016) second edition [ISBN 978-0128102350]

Diebold, F.X., Elements of Forecasting, (Thomson South-Western, 1980) fourth edition [ISBN 978-0324323597]

## Assessment

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

## Syllabus

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.