F71TS Time Series Analysis

COURSE DETAILS

Course Code: F71TS
Full Course Title: Time Series Analysis
SCQF Level: 11
SCAF Credits: 7.5
Available as Elective: No

DELIVERY LEVEL

Undergraduate: Yes  |  Postgraduate Taught: Yes  |  Postgraduate Research: No

COURSE AIMS

This half-course aims to provide student with an introduction to time series analysis, including models with applications in finance.

LEARNING OUTCOMES – SUBJECT MASTERY

On completion of this course the student should be able to:

- demonstrate knowledge of, and a critical understanding of, the main concepts of time series analysis
- demonstrate knowledge of, and a critical understanding of, the main properties of MA, AR, ARMA, ARIMA, and RW models
- use least squares, maximum likelihood and other methods to fit time series models to the data
- select proper model(s) using e.g. AIC or BIC
- fit trend and seasonal trend to the data, and fit time series models to the residuals
- understand methods used to produce forecasts
- understand ARCH, GARCH and other nonlinear time series models and their applications for modelling of financial data
- understand time series data well, and perform basic calculations and summaries of time series data
- understand and critically assess time series models fitted by computer packages
- use a range of time series models to produce forecasts

LEARNING OUTCOMES – PERSONAL ABILITIES

At the end of the course student should be able to:

- Communicate meaningfully and productively with others (including practitioners and professionals in the financial services industry) on time series analysis issues
- Demonstrate the ability to earn independently
- Manage time, work to deadlines and prioritise workloads
F71TS Time Series Analysis

**SYLLABUS**

- Basic time series concepts and operators
- Stationary processes, general linear filter, autocorrelation function and spectrum
- MA, AR and ARIMA processes
- ARIMA processes and Random Walk (RW) with or without drift
- Model estimation and model selection
- Models with trend and/or seasonality
- Forecasting
- Introduction to nonlinear processes

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Examination will be at least 60% and no more than 80%.
Re-assessment in the next academic year.
Coursework will be at least 20% and no more than 40%.