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

COURSE RELATIONSHIPS

<table>
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<tr>
<th>Course Code</th>
<th>Level</th>
<th>Title</th>
<th>School</th>
<th>Type</th>
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<tbody>
<tr>
<td>C21FE</td>
<td>11</td>
<td>Financial Econometrics</td>
<td>School of Mgmt &amp; Languages</td>
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LOCATION AND ASSESSMENT METHODS

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<th>Edi</th>
<th>SBC</th>
<th>Ork</th>
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<td>Examination</td>
<td>60</td>
<td>120</td>
<td>Assessment</td>
<td>Semester 2</td>
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Examination will be at least 60% and no more than 80%.

| Y   |     |     |     |       |     |      |     |     | Examination | 100     | 120       | Reassessment | Semester 2 |         |

Re-assessment in the next academic year.

| Y   |     |     |     |       |     |      |     |     | Coursework   | 40      | Assessment | Semester 2 |         |

Coursework will be at least 20% and no more than 40%.