

## **COURSE SPECIFICATION DOCUMENT**

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|-------------------------------------------|------------------------------------------------------|
| <b>Academic School / Department:</b>      | Richmond Business School                             |
| <b>Programme:</b><br>Finance & Investment | Economics                                            |
| <b>FHEQ Level:</b>                        | 6                                                    |
| <b>Course Title:</b>                      | Econometrics II – Applied Econometrics               |
| <b>Course Code:</b>                       | ECN 6103                                             |
| <b>Total Hours:</b>                       | 160                                                  |
| Timetabled Hours:                         | 45                                                   |
| Guided Learning Hours:                    | 15                                                   |
| Independent Learning:                     | 100                                                  |
| <b>Credits:</b>                           | 16 UK CATS credits<br>8 ECTS credits<br>4 US credits |

### **Course Description:**

This course is an applied course in modelling data particularly time series data as a practical guide to quantitative research in Economics, Finance, Development Studies, and areas of business such as Marketing. The focus of the course is to build on principal econometric techniques learnt and to extend them by dealing with real- world issues without adopting an excessively esoteric and/or mathematical approach.

### **Prerequisites:**

ECN 5215

### **Aims and Objectives:**

- Extend the students' knowledge and understanding of running regression for empirical research.
- Modelling time series data by connecting the phenomenon observed, the underlying theory, the raw data and correctly applied statistical techniques.
- Providing empirical evidence that support (or refute) hypotheses, illustrate trends or structural breaks and allow inferences about relationships between phenomena by constructing models for data that follow a natural ordering over time so that successive observations exhibit intercorrelation.
- Capturing important dynamic structures in economics, finance and development studies by examining lagged values of the explanatory or dependent variables.

### **Programme Outcomes:**

Economics: A2,A3, A4, B2, B3, D

Finance and Investment: A4, B1, B2, B3, B4, C1, C2,D2, D3, D5 (Level 6)

A detailed list of the programme outcomes are found in the Programme Specification.

This is located at the archive maintained by the Registry and found at:

<https://www.richmond.ac.uk/programme-and-course-specifications/>

### **Learning Outcomes:**

By the end of this course, successful students should be able to:

### **Knowledge and Understanding**

- Demonstrate an understanding of the steps involved in testing regression residuals to find out if they are of the same equal error variance and unequal spread and if the error terms are correlated in successive observations of the data that follow a natural ordering over time.
- Demonstrate an understanding of time lags, structural breaks and different related models.
- Explain the defining characteristics of various types of stochastic processes and identify the appropriate time series model for a given data set.
- Highlight the problems that may occur if non-stationary data are used in their level form and test for unit root and examine whether systems of variables are co-integrated.
- Construct multivariate conditional volatility models and compare between alternative specifications.

### **Subject-Specific Skills**

- Focusing on parsimony: attempting to abstract from the complexity to strip theoretical models to their bare essentials.

### **Numeracy**

- Procession of data
- Numerical skills are necessary for the handling of information
- Interpretation of data and understanding of statistical significance
- Recognition that conclusions drawn from data might be ambiguous.

### **Indicative Content:**

1. Review of the linear regression model and functional form
2. Regression diagnostic: autocorrelation
3. Regression with time series data: stationary variables
4. Regression with time series data: non stationary variables
5. Co-integration and error correction models
6. Forecasting : estimating a Vector Error Correction(VEC) and Vector Autoregression(VAR)models
7. Asset Price volatility: testing for Autoregressive Conditional Heteroskedasticity

(ARCH) effects

8. Generalized ARCH and GARCH- in- Mean Models
9. Panel data regression models
10. How to prepare an empirical dissertation or a senior project in Economic, finance or marketing

**Assessment:**

This course conforms to the University Assessment Norms approved at Academic Board and are located at <https://www.richmond.ac.uk/university-policies/>

**Teaching Methodology:**

The course will be taught using a variety of methods including lectures, directed and undirected reading, case studies, project work, and discussions. Individual or group supervisions will be provided for the set projects/assignments.

**Indicative Text(s):**

Textbooks:

Wooldridge, J. (2019). *Introductory Econometrics: A Modern Approach*, 7<sup>th</sup> edition, Cincinnati: South-Western.

Heiss, F. (2016). *Using R for Introductory Econometrics*, Scotts Valley, CA: CreateSpace Independent Publishing

Further reading:

Asteriou, D. and Hall, S. (2015). *Applied Econometrics*. London: Palgrave Macmillan. (eViews)

Baddeley, M., Barrowclough, D. (2009) *Running Regression*, Cambridge: CUP

Brooks, C. (2014) *Introductory Econometrics for Finance*, 3<sup>rd</sup> edition, Cambridge: CUP

Enders, W. (2009) *Applied Econometric Time Series*, 3<sup>rd</sup> edition, London: Wiley

Gujarati, D.N., Porter, D.D. (2009) *Basic Econometrics*, 5<sup>th</sup> edition, London: McGraw Hill

Gujarati, D., (2011) *Econometrics by Example*, Basingstoke: Palgrave - Macmillan

**Journals**

[Click here to enter text.](#)

**Web Sites**

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See syllabus for complete reading list

**Change Log for this CSD:**

| Nature of Change                       | Date<br>Approved &<br>Approval Body<br>(School or AB) | Change Actioned by<br>Registry Services |
|----------------------------------------|-------------------------------------------------------|-----------------------------------------|
| Minor: Updated Reading List            | Feb 21                                                |                                         |
| Updated credits, hours and methodology | Jan 2022 AB                                           |                                         |
| Revision – annual update               | May 2023                                              |                                         |
| Total Hours Updated                    | April 2024                                            |                                         |
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