

# EC987-30 Quantitative Methods: Econometrics B (for MSc Behavioural and Economic Science - Economics Track)

**23/24**

**Department**

Economics

**Level**

Taught Postgraduate Level

**Module leader**

Wiji Arulampalam

**Credit value**

30

**Module duration**

12 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

The module provides students with a thorough understanding of material needed for empirical quantitative analysis, particularly applied econometrics. You will understand how to produce high quality empirical econometric analysis using cross-sectional and panel data, and also learn to interpret critically empirical results.

[Module web page](#)

### Module aims

The aim of the module is to give students a good grounding in maths, statistics and modern econometric techniques. Within the econometrics element, students will study the ways in which the techniques are applied in the empirical analysis of economic data. This module will supplement the development of these key and fundamental professional skills, by looking at more

advanced topics. The module covers the analysis of cross-section and limited dependent variable data (but does not cover the analysis of time-series data).

## **Outline syllabus**

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The syllabus for this module will be based on the following topics; however this list is not limited to those listed below and does not infer all of these topics will be studied in the module:

Introductory Mathematics and Statistics: pre-sessional topics covered will include linear algebra, multivariate calculus and constrained optimisation, differential and difference equations, basic probability theory and hypothesis testing.

The module will emphasise microeconomic applications, and will cover: properties of estimators and how to generate different estimators (Maximum Likelihood Estimation, least squares, method of moments); discrete choice models (binary, unordered multinomial); censored and truncated dependent variable models (Tobit, endogenous selection - Heckman, switching regression models); Linear panel data models; Treatment evaluation methods.

## **Learning outcomes**

By the end of the module, students should be able to:

- Subject-specific skills/Professional Skills:...produce empirical econometric analysis. The teaching and learning methods that enable students to achieve this learning outcome are: lectures, seminars, independent study. The summative assessment methods that measure the achievement of this learning outcome are: final examination.
- Cognitive skills:...interpret critically empirical results, including the vast array of diagnostic and test statistics often reported, and to come to a balanced view concerning the weight of the empirical evidence presented. The teaching and learning methods that enable students to achieve this learning outcome are: lectures, seminars, independent study. The summative assessment methods that measure the achievement of this learning outcome are: final examination.
- Subject knowledge and understanding:...demonstrate an understanding of fundamental concepts in mathematics and statistics relevant to the other core modules and be able to apply these concepts to economics. The teaching and learning methods that enable students to achieve this learning outcome are: lectures, seminars, independent study. The summative assessment methods that measure the achievement of this learning outcome are: test and final examination.
- Subject knowledge and understanding:...demonstrate knowledge and understanding of material needed for empirical quantitative analysis. The teaching and learning methods that enable students to achieve this learning outcome are: lectures, seminars, independent study. The summative assessment methods that measure the achievement of this learning outcome are: final examination.
- Subject knowledge and understanding:...understand the theory and practice of modern econometrics at a level appropriate for postgraduates emphasising applied econometrics.

The teaching and learning methods that enable students to achieve this learning outcome are: lectures, seminars, independent study. The summative assessment methods that measure the achievement of this learning outcome are: final examination.

## Indicative reading list

Please see Talis Aspire link for most up to date list.

[View reading list on Talis Aspire](#)

## Subject specific skills

Students will have the opportunity to develop skills in:

Analytical thinking and communication

Analytical reasoning

Critical thinking

Problem-solving

Abstraction

Policy evaluation

Concepts of Simultaneity and Endogeneity

Analysis of optimisation

Understanding of Uncertainty and Incomplete Information

## Transferable skills

Students will have the opportunity to develop:

Numeracy and quantitative skills

Data-based skills

IT skills

Written communication skills

Oral communication skills

Mathematical, statistical and data-based research skills

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## Study

### Study time

| Type           | Required                   |
|----------------|----------------------------|
| Lectures       | 9 sessions of 2 hours (6%) |
| Seminars       | 8 sessions of 1 hour (3%)  |
| Other activity | 52 hours (17%)             |
| Private study  | 220 hours (73%)            |
| Total          | 300 hours                  |

| <b>Type</b> | <b>Required</b> |
|-------------|-----------------|
| Assessment  | 2 hours (1%)    |
| Total       | 300 hours       |

### **Private study description**

Private study will be required in order to prepare for seminars/classes, to review lecture notes, to prepare for forthcoming assessments, tests, and exams, and to undertake wider reading around the subject.

### **Other activity description**

Pre-sessional Maths and Statistics lectures and classes

### **Costs**

No further costs have been identified for this module.

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### **Assessment**

You do not need to pass all assessment components to pass the module.

#### **Assessment group D3**

|   | <b>Weighting</b> | <b>Study time</b> |
|---|------------------|-------------------|
| Test 1 (locally held)<br>Introductory Maths and Statistics test | 8%               |                   |
| Test 2 (locally held)<br>Introductory Maths and Statistics test | 12%              | 2 hours           |
| Test 3<br>Online Examination                                    | 20%<br>60%       |                   |

A paper which examines the course content and ensures learning outcomes are achieved.

~Platforms - AEP

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- Online examination: No Answerbook required
- Students may use a calculator

#### **Assessment group R**

|   | <b>Weighting</b> | <b>Study time</b> |
|---|------------------|-------------------|
| Online Examination  | 100%             |                   |
| A paper which examines the course content and ensures learning outcomes are achieved. |                  |                   |
| ~Platforms - AEP  |                  |                   |

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- Online examination: No Answerbook required

## **Feedback on assessment**

The Department of Economics is committed to providing high quality and timely feedback to students on their assessed work, to enable them to review and continuously improve their work. We are dedicated to ensuring feedback is returned to students within 20 University working days of their assessment deadline. Feedback for assignments is returned either on a standardised assessment feedback cover sheet which gives information both by tick boxes and by free comments or via free text comments on Tabula, together with the annotated assignment. For tests and problem sets, students receive solutions as an important form of feedback and their marked assignment, with a breakdown of marks and comments by question and sub-question. Students are informed how to access their feedback, either by collecting from the Department of Economics Postgraduate Office or via Tabula. Module leaders often provide generic feedback for the cohort outlining what was done well, less well, and what was expected on the assignment and any other common themes. This feedback also includes a cumulative distribution function with summary statistics so students can review their performance in relation to the cohort. This feedback is in addition to the individual-specific feedback on assessment performance.

[Past exam papers for EC987](#)

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## **Availability**

### **Pre-requisites**

An undergraduate module in introductory econometrics and basic knowledge of matrix algebra.

### **Courses**

This module is Core optional for:

- Year 1 of TECS-C8P8 Postgraduate Taught Behavioural and Economics Science (Economics Track)

This module is Core option list A for:

- Year 1 of TECS-C8P8 Postgraduate Taught Behavioural and Economics Science (Economics Track)