EC910-45 Quantitative Methods: Econometrics B

26/27

Department
Economics
Level
Taught Postgraduate Level
Module leader
Han Zhang
Credit value
45
Module duration
20 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

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, time-series, 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.

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 first term will emphasise microeconometric 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.

The second term covers structural econometric modelling (endogeneity and instrumental variables) as well as time series econometrics for macroeconometrics and finance. This will include the investigation of dynamic econometric modelling based on ARMA, GARCH, Vector AutoRegression, Stochastic Volatility and State Space models.
Inference techniques include Maximum Likelihood, Generalized Method of Moments and Simulation-based Inference.

Learning outcomes

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

- 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.
- Subject Knowledge and Understanding: demonstrate a deep understanding of material needed for empirical quantitative analysis.
- Subject Specific and Professional Skills: demonstrate a full knowledge of the theory and practice of modern econometrics, particularly applied econometrics.
- 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.

Indicative reading list

Reading lists can be found in Talis

Specific reading list for the module

Subject specific skills

Applied Economics
Economic Information
Economic Principles

Research and Debate
Abstraction
Analysis of Incentives
Analysis of Optimisation
Analytical Reasoning
Analytical thinking and communication
Concepts of Simultaneity and Endogeneity
Creative Thinking
Critical Thinking
Policy Evaluation
Problem Solving
Sustainability
Understanding of Uncertainty and Incomplete Information

Transferable skills

Data-based skills
IT skills
Numeracy and Quantitative Skills
Information Technology
Mathematical, statistical, data-based research skills
Oral Communication
Team Work Skills
Written Communication
Coding Skills (Stata and R)

Study

Study time

Type	Required
Lectures	18 sessions of 2 hours (8%)
Seminars	16 sessions of 1 hour (4%)
Other activity	52 hours (12%)
Private study	346 hours (77%)
Total	450 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.

Assessment

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

Assessment group D4

	Weighting	Study time	Eligible for self-certification
Test 1 Introductory Maths and Statistics test	4%		No
Test 2 Introductory Maths and Statistics test	6%		No
Test 3	10%		No
Group Project	25%		No
Centrally-timetabled examination (On-campus)	55%		No

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

- Answerbook Green (8 page)
- Students may use a calculator
- Economics dept. statistical tables (yellow/ red)

Assessment group R4

	Weighting	Study time	Eligible for self-certification
In-person Examination	100%		No

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

	Weighting	Study time	Eligible for self-certification

- Students may use a calculator
- Economics dept. statistical tables (yellow/ red)
- Answerbook Green (8 page)

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 EC910

Availability

Pre-requisites

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

Courses

This module is Core for:

- TECS-L1I1 Postgraduate Taught Economics and Data Science
  - Year 1 of L1I1 Economics and Data Science
  - Year 1 of L1I1 Economics and Data Science

This module is Core optional for:

- Year 1 of TECA-L1P6 Postgraduate Taught Economics
- Year 1 of TECA-L1P7 Postgraduate Taught Economics and International Financial Economics

This module is Optional for:

- Year 4 of USTA-G300 Undergraduate Master of Mathematics,Operational Research,Statistics and Economics

This module is Option list A for:

- Year 4 of USTA-G300 Undergraduate Master of Mathematics,Operational Research,Statistics and Economics