EC140-15 Mathematical Techniques B

26/27

Department
Economics
Level
Undergraduate Level 1
Module leader
Jo Turrall
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

Students will be given the opportunity to develop the requisite quantitative skills for a rigorous study of contemporary economics, including univariate and multivariate calculus, constrained optimization and matrix algebra. The module incorporates both the essential mathematical methods as well as illustrative economic applications. You will also develop appropriate maths-related technical computing skills.

Module web page

Module aims

To develop the requisite mathematical and quantitative skills for a rigorous study of contemporary economics, including econometric methods and applied economics. The module forms part of the first year core cluster EC120 Quantitative Techniques, which is made up of one module in Mathematical Techniques (A (EC139) or B (EC140)), and one module in Statistical Techniques (A (EC122) or B (EC124)).

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.

Pre-requisite. You will be expected to have a good knowledge of A level algebra and calculus including the rules of differentiation and integration (which will not be taught).

The module will typically cover the following topics:
Calculus of functions of two or more variables; Unconstrained and constrained optimisation; Comparative statics; Matrix algebra; Financial mathematics, and an introduction to difference equations; Illustrative applications of all techniques in economics; mathematical computing skills.

Learning outcomes

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

- :...acquire the tools of quantitative methods necessary to study core and optional first and second year modules in economics;
- :...develop basic programming ability in the selected statistical software package, including utilising this software to graph functions and undertake mathematical methods;
- '... to enable a systematic quantitative approach to analysing economic problems;
- develop technical computing skills for writing mathematical text and numerical mathematical analysis

Indicative reading list

Reading lists can be found in Talis

Specific reading list for the module

Subject specific skills

Applied Economics
Economic principles
Abstraction
Analytical reasoning
Analytical thinking and communication
Problem solving

Transferable skills

IT skills
Numeracy and quantitative skills
Information technology
Math, Statistical, data-based research skills
Oral communication
Written communication
Coding Skills (R and Latex)

Study

Study time

Type	Required
Lectures	10 sessions of 2 hours (13%)
Seminars	8 sessions of 1 hour (5%)
Private study	122 hours (81%)
Total	150 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.

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 D2

	Weighting	Study time	Eligible for self-certification
Problem set	10%		No
Problem sets throughout the term to test the course content			
Centrally-timetabled examination (On-campus)	90%		No
A paper which examines the course content and ensures learning outcomes are achieved.			

- Students may use a calculator
- Answerbook Pink (12 page)

Assessment group R2

	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.

- Answerbook Pink (12 page)
- Students may use a calculator

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 Undergraduate 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 EC140

Availability

Pre-requisites

For Economics joint degree course students A-level in Mathematics, or equivalent.

Post-requisite modules

If you pass this module, you can take:

- EC353-15 Industrial Economics 1: Market Structure for Finalists
- EC333-15 Topics in Financial Economics: Theories and International Finance
- EC220-15 Mathematical Economics 1A
- EC203-30 Applied Econometrics
- EC236-15 Topics in Applied Economics (2b)
- EC236-15 Topics in Applied Economics (2b)
- EC208-15 Industrial Economics 1: Market Structure

- EC226-30 Econometrics 1
- EC221-15 Mathematical Economics 1B

Courses

This module is Core for:

- UECA-3 Undergraduate Economics 3 Year Variants
  - Year 1 of L100 Economics
  - Year 1 of L116 Economics and Industrial Organization

This module is Core optional for:

- Year 1 of UIPA-L1L8 Undergraduate Economic Studies and Global Sustainable Development
- UECA-LM1D Undergraduate Economics, Politics and International Studies
  - Year 1 of LM1D Economics, Politics and International Studies
  - Year 1 of LM1D Economics, Politics and International Studies
- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 1 of L1CA Economics, Psychology and Philosophy
  - Year 1 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
  - Year 1 of L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
  - Year 1 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
  - Year 1 of L1CF Economics, Psychology and Philosophy (Tripartite Pathway)
- Year 1 of ULNA-R1L5 Undergraduate French and Economics (3 year)
- Year 1 of ULNA-R1L4 Undergraduate French and Economics (4-year)
- Year 1 of ULNA-R2L5 Undergraduate German and Economics (3 year)
- Year 1 of ULNA-R2L4 Undergraduate German and Economics (4-year)
- Year 1 of ULNA-R4LA Undergraduate Hispanic Studies and Economics (3-year)
- Year 1 of ULNA-R4L1 Undergraduate Hispanic Studies and Economics (4-year)
- Year 1 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)
- Year 1 of ULNA-R9L1 Undergraduate Modern Languages and Economics (4-year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 1 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 1 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 1 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 1 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 1 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 1 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 1 of V7ML Philosophy, Politics and Economics (Tripartite)