

# EC221-15 Mathematical Economics 1B

**26/27**

**Department**

Economics

**Level**

Undergraduate Level 2

**Module leader**

Darina Dintcheva-Bis

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

EC221-15 Mathematical Economics 1B

[Module web page](#)

### Module aims

To develop the notion of competitive equilibrium and the fundamental properties of competitive equilibria.

### 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 module will typically cover the following topics:

1. Foundations for the study of Walrasian Equilibrium: Consumer preferences, Firms and production, Competitive markets
2. Efficiency of the allocation of consumption and production

3. Walrasian Equilibrium in Exchange Economies
4. Walrasian Equilibrium in Production Economies
5. The First Welfare Theorem of Economics
6. The Second Welfare Theorem of Economics
7. Arrow-Debreu and Radner equilibria

## Learning outcomes

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

- To develop an understanding of the normative significance of competitive markets in achieving Pareto-optimal allocations
- To recognise that a small number of intuitive assumptions and principles, when formulated precisely, can provide valuable insights into fundamental economic problems.
- To understand the limitations of existing economic models and to be aware of directions in which frontier research is extending and refining these models.

## Indicative reading list

[Reading lists can be found in Talis](#)

[Specific reading list for the module](#)

## Subject specific skills

Economic principles

Abstraction

Analysis of incentives

Analysis of institutions

Analytical reasoning

Analytical thinking and communication

Strategic thinking

Critical thinking

Policy evaluation

Problem solving

## Transferable skills

Math, Statistical, data-based research skills

Numeracy and quantitative skills

Written communication

Oral communication

Information technology

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# Study

## Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	5 sessions of 1 hour (3%)
Private study	125 hours (83%)
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.

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## Assessment

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

Students can register for this module without taking any assessment.

## Assessment group DE

	Weighting	Study time	Eligible for self-certification
Test 60 minute test	30%		No
Centrally-timetabled examination (On-campus)	70%		No

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

## Assessment group R3

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
In-person Resit Examination	100%		No

- 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 EC221](#)

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## **Availability**

### **Pre-requisites**

The module introduces advanced-level mathematical thinking and typically attracts students from economics- and math-based degree courses.

Any of:

EC106-24 Introduction to Economics OR

EC107-30 Economics 1 OR

EC109-30 Microeconomics 1 OR

EC137-15 Economics 1: Micro

AND (FOR ECONOMICS STUDENTS ONLY)

EC139-15 Mathematical Techniques A AND

EC122-15 Statistical Techniques A

OR

EC140-15 Mathematical Techniques B AND

EC124-15 Statistical Techniques B

EC106 or EC107 for GL11 and other Maths students

To take this module, you must have passed:

- All of
  - Any of
    - [EC106-30 Introduction to Economics](#)
    - [EC107-30 Economics 1](#)
    - [EC109-30 Microeconomics 1](#)
  - All of
    - [EC139-15 Mathematical Techniques A](#)
    - [EC122-15 Statistical Techniques A](#)
  - Any of
    - [EC140-15 Mathematical Techniques B](#)
    - [EC124-15 Statistical Techniques B](#)

## Courses

This module is Core optional for:

- Year 2 of UMAA-GL11 Undergraduate Mathematics and Economics
- Year 2 of UECA-GL12 Undergraduate Mathematics and Economics (with Intercalated Year)

This module is Optional for:

- Year 1 of TECA-L1P5 Postgraduate Taught Economics
- TECA-L1PA Postgraduate Taught Economics (Diploma plus MSc)
  - Year 1 of L1PA Economics (Diploma plus MSc)
  - Year 1 of L1PA Economics (Diploma plus MSc)
- UIPA-L1L8 Undergraduate Economic Studies and Global Sustainable Development
  - Year 2 of L1L8 Economic Studies and Global Sustainable Development
  - Year 3 of L1L8 Economic Studies and Global Sustainable Development
- Year 2 of UECA-3 Undergraduate Economics 3 Year Variants
- UECA-LM1D Undergraduate Economics, Politics and International Studies
  - Year 2 of LM1D Economics, Politics and International Studies
  - Year 2 of LM1D Economics, Politics and International Studies
- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 2 of L1CA Economics, Psychology and Philosophy
  - Year 2 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
  - Year 2 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
  - Year 2 of L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
  - Year 2 of L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
  - Year 2 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)

- Year 2 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
  - Year 2 of L1CF Economics, Psychology and Philosophy (Tripartite Pathway)
- Year 4 of ULNA-R1L4 Undergraduate French and Economics (4-year)
- Year 4 of ULNA-R2L4 Undergraduate German and Economics (4-year)
- Year 4 of ULNA-R4L1 Undergraduate Hispanic Studies and Economics (4-year)
- Year 4 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)
- UMAA-G100 Undergraduate Mathematics (BSc)
  - Year 2 of G100 Mathematics
  - Year 2 of G100 Mathematics
  - Year 2 of G100 Mathematics
  - Year 3 of G100 Mathematics
  - Year 3 of G100 Mathematics
  - Year 3 of G100 Mathematics
- UMAA-G103 Undergraduate Mathematics (MMath)
  - Year 2 of G100 Mathematics
  - Year 2 of G103 Mathematics (MMath)
  - Year 2 of G103 Mathematics (MMath)
  - Year 3 of G100 Mathematics
  - Year 3 of G103 Mathematics (MMath)
  - Year 3 of G103 Mathematics (MMath)
- Year 4 of ULNA-R9L1 Undergraduate Modern Languages and Economics (4-year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
  - Year 2 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 2 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
  - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
  - Year 3 of V7ML Philosophy, Politics and Economics (Tripartite)
- UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)
  - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)
  - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)