EC221-15 Mathematical Economics 1B

24/25

Department
Economics
Level
Undergraduate Level 2
Module leader
Darina Dintcheva
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

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 and Definitions for the Study of Walrasian Equilibrium: Commodities, Consumer preferences, Production
2. Efficiency of Allocation 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:

- Subject Knowledge and Understanding: Acquire a sense of the normative significance of competitive markets in obtaining Pareto optimal allocations. The teaching and learning methods that enable students to achieve this learning outcome are lectures and seminars.
- Subject Knowledge and Understanding: Learn that a few intuitive assumptions and principles, formulated precisely, can go a long way in understanding the fundamental aspects of many economic problems. The teaching and learning methods that enable students to achieve this learning outcome are lectures and seminars.
- Subject Knowledge and Understanding: Understand the limits of existing economic models and be aware of some directions in which frontier research is modifying these models. The teaching and learning methods that enable students to achieve this learning outcome are lectures and seminars.

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,
Strategic thinking,
Problem-solving,
Abstraction,
Policy evaluation,
Analysis of incentives,
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,
Written communication skills,
Oral communication skills,
Mathematical, statistical and data-based research skills.

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.

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 DD

	Weighting	Study time
Test	30%	
In-person Examination	70%	

- Students may use a calculator

Assessment group R2

	Weighting	Study time
In-person Resit Examination	100%	

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

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

Post-requisite modules

If you pass this module, you can take:

- EC331-30 Research in Applied Economics
- EC331-30 Research in Applied Economics

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:

- TECA-L1PA Postgraduate Taught Economics (Diploma plus MSc)
  - Year 1 of L1PA Economics (Diploma plus MSc)
  - Year 1 of L1PA Economics (Diploma plus MSc)
  - Year 2 of L1PA Economics (Diploma plus MSc)
  - Year 2 of L1PA Economics (Diploma plus MSc)
- UECA-3 Undergraduate Economics 3 Year Variants
  - Year 2 of L100 Economics
  - Year 2 of L100 Economics
  - Year 2 of L100 Economics
  - Year 2 of L116 Economics and Industrial Organization
  - Year 2 of L116 Economics and Industrial Organization
- UECA-4 Undergraduate Economics 4 Year Variants
  - Year 2 of LM1H Economics, Politics & International Studies with Study Abroad
  - Year 2 of LM1H Economics, Politics & International Studies with Study Abroad
- 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 L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
    - Year 2 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
    - Year 3 of L1CA Economics, Psychology and Philosophy
    - Year 3 of L1CC Economics, Psychology and Philosophy (Behavioural Economics Pathway)
    - Year 3 of L1CD Economics, Psychology and Philosophy (Economics with Philosophy Pathway)
    - Year 3 of L1CE Economics, Psychology and Philosophy (Philosophy and Psychology Pathway)
- UPHA-L1CB Undergraduate Economics, Psychology and Philosophy (with Intercalated Year)
    - Year 4 of L1CG Economics, Psychology and Philosophy (Behavioural Economics Pathway) (with Intercalated Year)
    - Year 4 of L1CH Economics, Psychology and Philosophy (Economics with Philosophy Pathway) (with Intercalated Year)
    - Year 4 of L1CJ Economics, Psychology and Philosophy (Philosophy and Psychology Pathway) (with Intercalated Year)
    - Year 4 of L1CB Economics, Psychology and Philosophy (with Intercalated Year)
    - Year 4 of L1CB Economics, Psychology and Philosophy (with Intercalated Year)
- Year 4 of UMAA-G105 Undergraduate Master of Mathematics (with Intercalated Year)
- Year 3 of UMAA-GL11 Undergraduate Mathematics and Economics
- Year 4 of UECA-GL12 Undergraduate Mathematics and Economics (with Intercalated Year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
    - 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 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 V7MQ Philosophy, Politics and Economics (Bipartite) with Intercalated Year
    - Year 4 of V7MH Philosophy, Politics and Economics - Economics/Philosophy Bipartite (Economics Major) (with Intercalated year)
    - Year 4 of V7MI Philosophy, Politics and Economics - Philosophy/Economics Bipartite (Philosophy Major) (with Intercalated year)
    - Year 4 of V7MJ Philosophy, Politics and Economics - Philosophy/Politics Bipartite (with Intercalated year)
    - Year 4 of V7MG Philosophy, Politics and Economics - Politics/Economics Bipartite (Politics Major) (with Intercalated year)

This module is Unusual option for:

- UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
  - Year 2 of L1CA Economics, Psychology and Philosophy
  - Year 3 of L1CA Economics, Psychology and Philosophy
- 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 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 V7MP Philosophy, Politics and Economics (Bipartite)
- UPHA-V7MM Undergraduate Philosophy, Politics and Economics (with Intercalated year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
  - Year 4 of V7MQ Philosophy, Politics and Economics (Bipartite) with Intercalated Year
  - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)

This module is Option list A for:

- USTA-Y602 Undergraduate Mathematics,Operational Research,Statistics and Economics
  - Year 2 of Y602 Mathematics,Operational Research,Stats,Economics
  - Year 2 of Y602 Mathematics,Operational Research,Stats,Economics

This module is Option list B for:

- UMAA-G105 Undergraduate Master of Mathematics (with Intercalated Year)
  - Year 2 of G105 Mathematics (MMath) with Intercalated Year
  - Year 4 of G105 Mathematics (MMath) with Intercalated 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)
- UMAA-G106 Undergraduate Mathematics (MMath) with Study in Europe

    - Year 2 of G106 Mathematics (MMath) with Study in Europe
    - Year 3 of G106 Mathematics (MMath) with Study in Europe
- Year 2 of UMAA-G1NC Undergraduate Mathematics and Business Studies
- Year 2 of UMAA-G1N2 Undergraduate Mathematics and Business Studies (with Intercalated Year)
- USTA-GG14 Undergraduate Mathematics and Statistics (BSc)
    - Year 2 of GG14 Mathematics and Statistics
    - Year 2 of GG14 Mathematics and Statistics
- UMAA-G101 Undergraduate Mathematics with Intercalated Year
    - Year 2 of G101 Mathematics with Intercalated Year
    - Year 4 of G101 Mathematics with Intercalated Year
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
    - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)
    - Year 2 of V7MP Philosophy, Politics and Economics (Bipartite)

This module is Option list C for:

- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
    - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
    - 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 V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
    - Year 4 of V7MS Philosophy, Politics and Economics (Bipartite with Economics Major) (with Intercalated Year)
    - Year 4 of V7MQ Philosophy, Politics and Economics (Bipartite) with Intercalated Year
    - Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)

This module is Option list D for:

- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
    - Year 2 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
    - Year 3 of V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)