EC220-15 Mathematical Economics 1A

26/27

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

Description

Introductory description

Mathematical Economics 1A, "Game Theory," is an introduction to the rigorous mathematical study of strategic interactions. Students will learn how game theorists model such interactions, and how those models can be analyzed. By the end of the module, they will have developed a formidable toolbox of game-theoretic techniques, and will be familiar with a variety of applications of these techniques to real-world situations, both economic and otherwise.

Module web page

Module aims

Mathematical Economics 1a, “Introduction to Game Theory”, aims to provide a basic understanding of pure game theory and also introduce the student to a number of applications of game theory to economic problems of resource allocation.

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:Games in strategic form: Nash equilibrium and its applications to voting games, oligopoly, provision of public goods.Games in extensive form: sub game perfect equilibrium and its applications to voting games, repeated games.Static games with incomplete information: Bayesian equilibrium and its applications to auctions, contracts and mechanism design.Dynamic games of incomplete information: Perfect Bayesian equilibrium, Sequential equilibrium and its application to signalling games.Bargaining theory: Nash bargaining, non-cooperative bargaining with alternating offers and applications to economic markets.Evolutionary Game Theory

Learning outcomes

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

- Subject Specific and Professional Skills:...demonstrate understanding of the tools of game theory, and the ability to apply them to wide classes of problems.

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
Abstraction
Analysis of incentives
Analytical reasoning
Analytical thinking and communication
Critical thinking
Policy evaluation
Problem solving
Strategic thinking
Sustainability

Transferable skills

IT skills
Numeracy and quantitative skills
Information technology
Math, Statistical, data-based research skills
Oral communication
Written communication

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 B1

	Weighting	Study time	Eligible for self-certification
Centrally-timetabled examination (On-campus)	100%		No

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

Assessment group R4

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

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 EC220

Availability

Pre-requisites

Any of:

EC106-24 Introduction to Economics OR
EC107-30 Economics 1 OR
EC109-30 Microeconomics 1 OR
EC137-15 Economics 1: Micro

AND

EC139-15 Mathematical Techniques A AND
EC122-15 Statistical Techniques A

OR

EC140-15 Mathematical Techniques B AND
EC124-15 Statistical Techniques B AND

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
- All of
    - EC140-15 Mathematical Techniques B
    - EC124-15 Statistical Techniques B

Post-requisite modules

If you pass this module, you can take:

- EC334-15 Topics in Financial Economics: Corporate Finance and Markets
- EC301-15 Mathematical Economics 2: Dynamics, Uncertainty & Asymmetrical Information

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 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 2 of ULNA-R1L5 Undergraduate French and Economics (3 year)
- Year 4 of ULNA-R1L4 Undergraduate French and Economics (4-year)
- Year 2 of ULNA-R2L5 Undergraduate German and Economics (3 year)
- Year 4 of ULNA-R2L4 Undergraduate German and Economics (4-year)
- Year 2 of ULNA-R4LA Undergraduate Hispanic Studies and Economics (3-year)
- Year 4 of ULNA-R4L1 Undergraduate Hispanic Studies and Economics (4-year)
- Year 4 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)
- UVCA-LA99 Undergraduate Liberal Arts
    - Year 2 of LA99 Liberal Arts
    - Year 3 of LA99 Liberal Arts
- 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 V7MR Philosophy, Politics and Economics (Bipartite with Economics Major)
    - 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)
    - Year 3 of V7MP Philosophy, Politics and Economics (Bipartite)
    - 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 V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)

- Year 4 of V7MM Philosophy, Politics and Economics (Tripartite) (with Intercalated year)