

EC121-12 Mathematical Techniques A

20/21

Department

Economics

Level

Undergraduate Level 1

Module leader

Emil Kostadinov

Credit value

12

Module duration

10 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module provides an introductory treatment on univariate and multivariate calculus, compounding and discounting, constrained optimization and matrix algebra, appropriate for joint honours degrees with Economics.

[Module web page](#)

Module aims

To provide the mathematical techniques for a thorough and rigorous study of economic analysis, econometric methods and applied economics subjects, appropriate to joint honours courses with 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 (EC121) or B (EC123)), one module in Statistical Techniques (A (EC122) or B (EC124)) as well as Computing and Data Analysis (EC125).

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:

Revision of basic algebra; Introduction to calculus; Series (AP, GP, present value calculations); Exponential & logarithmic functions; Functions of two variables (calculus, constrained optimisation, applications); Integration; Difference equations; Applications in economics

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 for the single honours course in Economics.
- develop further their techniques of statistical methods and statistical modelling;
- generate an awareness and analysis of data and of data handling.

Indicative reading list

Please see Talis Aspire link for most up to date list.

[View reading list on Talis Aspire](#)

Subject specific skills

Analytical thinking and communication

Analytical reasoning

Problem-solving

Abstraction

Concepts of Simultaneity and Endogeneity

Analysis of optimisation

Transferable skills

Numeracy and quantitative skills

Written communication skills

Oral communication skills

Mathematical, statistical and data-based research skills

Study

Study time

Type	Required
Lectures	10 sessions of 2 hours (17%)
Seminars	4 sessions of 1 hour (3%)
Demonstrations	4 sessions of 1 hour (3%)
Total	120 hours

Type	Required
Private study	92 hours (77%)
Total	120 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 D2

	Weighting	Study time
Test 1	12%	
50 minute online test		
Test 2	12%	
50 minute online test		
6 x problem sets (1% each)	6%	
Online Examination	70%	
A paper which examines the course content and ensures learning outcomes are achieved.		

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

Assessment group R2

	Weighting	Study time
Online Examination - Resit	100%	
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 EC121](#)

Availability

Pre-requisites

At least a grade A in GCSE Mathematics, or equivalent.

Post-requisite modules

If you pass this module, you can take:

- EC208-15 Industrial Economics 1: Market Structure
- EC221-15 Mathematical Economics 1B
- EC221-12 Mathematical Economics 1B
- EC333-15 Topics in Financial Economics: Theories and International Finance
- EC333-15 Topics in Financial Economics: Theories and International Finance
- EC203-30 Applied Econometrics
- EC220-15 Mathematical Economics 1A
- EC226-30 Econometrics 1

- EC226-30 Econometrics 1
- EC220-12 Mathematical Economics 1A

Courses

This module is Core optional for:

- Year 1 of UIPA-L1L8 Undergraduate Economic Studies and Global Sustainable Development
- Year 1 of UPHA-L1CA Undergraduate Economics, Psychology and Philosophy
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
 - 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)

This module is Core option list A for:

- UECA-3 Undergraduate Economics 3 Year Variants
 - Year 1 of L116 Economics and Industrial Organization
 - Year 1 of L116 Economics and Industrial Organization
- 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
- Year 1 of ULNA-R1L4 Undergraduate French and Economics (4-year)
- UPHA-V7ML Undergraduate Philosophy, Politics and Economics
 - 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)

This module is Core option list B for:

- Year 1 of UIPA-L1L8 Undergraduate Economic Studies and Global Sustainable Development
- Year 1 of ULNA-R4L1 Undergraduate Hispanic Studies and Economics (4-year)
- Year 1 of ULNA-R3L4 Undergraduate Italian and Economics (4-year)

This module is Core option list C for:

- Year 1 of ULNA-R2L4 Undergraduate German and Economics (4-year)

This module is Core option list D for:

- Year 1 of ULNA-R9L1 Undergraduate Modern Languages and Economics (4-year)