

MATHEMATICAL METHODS AND APPLICATIONS - 2024/5

Module code: ECO00003

Module Overview

A foundation level mathematics module that covers the basic mathematics relevant for Economics students. The module is designed to prepare the students for the more advanced level mathematics and problem solving in the first year of their Economics programme. The module covers a variety of economic applications in order to illustrate to the students the link between economic theory and mathematics.

Module provider

Economics

Module Leader

LAZOPOULOS Ioannis (Economics)

Number of Credits: 15

ECTS Credits: 7.5

Framework: FHEQ Level 3

Module cap (Maximum number of students): N/A

Overall student workload

Independent Learning Hours: 91

Lecture Hours: 22

Tutorial Hours: 10

Guided Learning: 5

Captured Content: 22

Module Availability

Semester 1

Prerequisites / Co-requisites

None

Module content

Indicative content includes:

- Review of the basics: symbols, fractions, indices
- Introduction to algebra, series, functions and differentiation
- Graphs of functions
- Systems of linear equations
- Exponential and logarithmic functions
- Applications to economic theory (e.g. demand and supply, monopoly, multiplier)

Assessment pattern

Assessment type	Unit of assessment	Weighting
Online Scheduled Summative Class Test	Online Weekly Quiz 1 within a 4hr window	5
Online Scheduled Summative Class Test	Online Weekly Quiz 2 within a 4hr window	5
Online Scheduled Summative Class Test	Online Weekly Quiz 3 within a 4hr window	5
Online Scheduled Summative Class Test	Online Weekly Quiz 4 within a 4hr window	5
School-timetabled exam/test	MIDTERM TEST (1 HR)	20
Examination	FINAL EXAMINATION (120 MIN)	60

Alternative Assessment

None.

Assessment Strategy

The assessment strategy is designed to provide students with the opportunity to demonstrate their skills in performing basic mathematical operations, their understanding of the mathematical concepts and their ability to apply these skills and knowledge to economic analysis.

The assessment strategy is built around two different types of assessment: Formative (no contribution towards the final module mark) and summative (contributes towards the final module mark) assessment.

The formative assessment (e.g. practice tests) provides students with the opportunity to practice the skills that they will be examined on during the module. The built-in feedback will allow the students to identify their areas for improvement and encourage

them to seek further feedback and support while taking responsibility of their own learning.

The summative assessment for this module consists of:

- 4 quizzes
- A class test
- A final exam

and provides an additional source of feedback. The solutions to the test questions will be provided after the assessment allowing the students to collect further information on how well they are doing and help with preparation for the final exam. Students wishing to obtain further individual feedback can attend student consultation hours of the teaching staff. They will be able to post and answer other students’ questions on the Discussion Forum on SurreyLearn and will be encouraged to work in small groups to learn through discussion and exchange of ideas.

Module aims

- To equip the students with the ability to perform basic mathematical operations.
- To explain the concepts of mathematics as they pertain to economic theory.
- To equip the students with the ability to use mathematical methods to represent economic models at foundation level.

Learning outcomes

		Attributes Developed
001	Understand the role mathematics plays in the representation and analysis of economic theory.	KCT
002	Be proficient at algebra (linear and non-linear equations), series, functions, graphs, exponential and logarithmic functions.	KCT
003	Be able to structure economic and finance problems in mathematical format and solve where appropriate.	KCPT
004	Be able to build, develop and enhance personal learning strategies.	KCT

Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

Methods of Teaching / Learning

The learning and teaching strategy is designed to refresh and enhance skills in performing basic mathematical operations, in modelling using basic mathematical techniques, and to help students develop the ability to identify, structure and solve mathematical problems. All this will contribute to the students' resourcefulness and resilience.

The learning and teaching methods include:

- Lectures
- Seminars

The lectures will introduce the students to the weekly topic and provide examples of relevant applications in the context of economic theory. Students are encouraged to ask and answer questions to develop a deeper understanding of the material. The tutorials will focus on discussing a set of mathematical problems and applications that will be provided in advance of the session. Students are expected to solve the problems before attending the tutorial in order to able to discuss the solutions as well as ask for clarifications where needed. Guided learning consists of practice questions that the students can complete to obtain instant feedback on how well they have learnt the material.

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

Reading list

<https://readinglists.surrey.ac.uk>

Upon accessing the reading list, please search for the module using the module code: **ECO0003**

Other information

The School of Economics is committed to developing graduates with strengths in Employability, Digital Capabilities, Global and Cultural Capabilities, Sustainability, and Resourcefulness and Resilience. This module is designed to allow students to develop knowledge, skills, and capabilities particularly in the following areas:

Resourcefulness and resilience: The students will develop the ability to identify, structure and solve mathematical problems. The various forms of feedback will allow the students to identify their strengths and areas for improvement and allow them to develop strategies for efficient learning.

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Business Economics and Data Analytics with Foundation Year BSc (Hons)	1	Compulsory	Each unit of assessment must be passed at 50% to pass the module
Economics and Finance with Foundation Year BSc (Hons)	1	Compulsory	A weighted aggregate mark of 50% is required to pass the module

Programme	Semester	Classification	Qualifying conditions
Economics with Foundation Year BSc (Hons)	1	Compulsory	A weighted aggregate mark of 50% is required to pass the module

Please note that the information detailed within this record is accurate at the time of publishing and may be subject to change. This record contains information for the most up to date version of the programme / module for the 2024/5 academic year.