



Mathematics Course Descriptor

Course Title	Mathematics	Faculty	Economics
Course Code	NCHEC401	Course Leader	Dr. Georgios Zouros
Credit Points	15	Teaching Period	Michaelmas
FHEQ Level	Level 4	Date approved	June 2020
Compulsory/ Optional	Compulsory for Economics Major and PPE Economics Pathway students		
Pre-requisites	None		
Co-requisites	None		

COURSE SUMMARY

This is an introductory level course for those who wish to use mathematics seriously in social science, or in any other context. A range of basic mathematical concepts and methods in calculus of one and several variables and in linear algebra are covered and some applications illustrated.

This course is intended to prepare students for the use of mathematics in their economic theory courses (particularly Macroeconomics and Microeconomics), and accustom students to using mathematical methods in their studies.

COURSE AIMS

- Develop the basic mathematical tools necessary for further study in economics and related disciplines.
- Teach the techniques of calculus (differentiation, partial differentiation, optimisation and integration), methods of linear algebra (use of matrices), and the solution of difference and differential equations.
- Apply those ideas systematically, with emphasis on their application to economic problems, with the extended use of examples for motivation and illustration.

LEARNING OUTCOMES

On successful completion of the course, students will be able to:

KNOWLEDGE AND UNDERSTANDING

- K1a recognise the abstract mathematical concepts that would be useful in specific problems arising in the social sciences
- K2a apply differentiation techniques in optimization problems involving one or more variables

SUBJECT SPECIFIC SKILLS

- S1a solve problems involving differentiation, integration, homogeneous functions, Lagrange multipliers, vectors and matrices
- S2a apply the concepts of sets, functions, equations and graphs in problems involving equilibria

TRANSFERABLE AND PROFESSIONAL SKILLS

- T1a use optimisation techniques to solve real-world problems

TEACHING AND LEARNING

Students will have the opportunity to engage with:

- 1 x virtual learning environment (VLE)
- 15 x large-group hours
- 10 x tutorial hours (group tutorial)
- Weekly office hours

Students are required to attend and participate in all timetabled sessions for this course and, with the ongoing support available, to manage their directed learning and independent study.

Total study hours for this course are: 150.

EMPLOYABILITY SKILLS

- The course keeps students equipped and practiced with the basic numeracy skills learned at the secondary level.
- The course equips students with skills for optimisation problems, which are used in a range of managerial, planning, and resource allocation job roles across a number of fields.

ASSESSMENT

FORMATIVE

Students will be formatively assessed during the course by means of set assignments. These do not count towards the end of year results, but will provide students with developmental feedback, for example weekly exercises are provided and written answers are expected on a weekly basis.

SUMMATIVE

Assessment will be in one form:

AE:	Assessment Activity	Weighting (%)	Online submission	Duration	Length
1	Examination	100	No	2 hours	n/a

The examination will consist of a number of questions, and the student has a choice of questions. The examination will be assessed in accordance with the assessment aims set out in the Programme Specification.

FEEDBACK

Students will receive formal feedback in a variety of ways: written (including via email correspondence); oral (within classes or on an *ad hoc* basis) and indirectly through discussion during group tutorials. Students will also attend the formal meeting, Collections, at the end of Michaelmas and Hilary in which they will receive constructive and developmental feedback on their term's performance.

Feedback is provided on written assignments (including essays, briefings and reports) and through generic internal examiners' reports, both of which are posted on the College's VLE.

INDICATIVE READING

Note: Comprehensive and current reading lists for courses are produced annually in the Course Syllabus or other documentation provided to students; the indicative reading list provided below is used as part of the approval/modification process only.

BOOKS

M Anthony & N L Biggs, Mathematics for Economics and Finance: Methods and Modelling, CUP, 1996.

INDICATIVE TOPICS

Students will study the following topics:

- Sets, functions, equations, graphs
- Difference equations, sequences, limits
- Differentiation, inverse functions, exponential and logarithmic functions
- Partial differentiation, chain rule, homogeneous functions
- Optimisation in two variables: unconstrained and constrained
- Lagrange multipliers
- Vector notation and convexity
- Matrix notation, systems of linear equations, inverse matrices
- Integration
- Differential and difference equations

Title: NCHEC401 Mathematics Course Descriptor					
Approved by: Academic Board					
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2.0	June 2021	June 2021	Marianna Koli	1 Academic Handbook > Course Descriptors 2 VLE	April 2025
1.0	June 2020	June 2020	Marianna Koli	1 Academic Handbook > Course Descriptors 2 VLE	April 2025
Modifications (As per AQF4)					
Version number	Date approved	Date published	Modification (including category number)		
2.0	June 2021	June 2021	Category 2: Change to 'Teaching and Learning Strategy'		