

**University College London  
Department of Economics**

**ECON0006 Introduction to Mathematics for Economics**

This is a Part 1 of the year long module ECON0010 Mathematics for Economics and is taught in Term 1.

**Assumed knowledge**

A thorough knowledge of single-variable calculus.

**Aims**

To provide students with the mathematics to take them from GCE A level standard to that required for the remainder of the economics degree.

**Objectives**

At the end of the first term of the course, students should:

- (i) understand elementary matrix algebra in a form suitable for application to econometrics and optimisation;
- (ii) understand calculus of several variables, including optimisation of functions of several variables, and be able to apply their knowledge to simple economic problems;
- (iii) understand simple first-order differential and difference equations and be able to apply their knowledge to simple problems in economic dynamics.

**Outline Syllabus**

Vectors, linear dependence and independence. Matrix algebra. Systems of linear equations, Gaussian elimination, reduction to echelon form. Inverse of a matrix. Determinants. Quadratic forms.

Calculus of several variables: differentiation, constrained optimisation, applications to consumer theory and production theory. First-order differential and difference equations.

**Recommended reading**

Malcolm Pemberton and Nicholas Rau, Mathematics for Economists: An introductory textbook, Fifth Edition, Manchester University Press, 2023

**Typical Assessment**

20% course work

80% examination