

6401 (Mathematics for Students of Economics, Statistics and Related Disciplines 1)

<i>Year:</i>	2010–2011
<i>Code:</i>	MATH6401
<i>Old Code:</i>	MATHB51A
<i>Value:</i>	Half unit (= 7.5 ECTS credits)
<i>Term:</i>	1
<i>Structure:</i>	3 hours lectures and 1 hour problem class per week. Assessed weekly coursework.
<i>Assessment:</i>	90% examination, 10% coursework
<i>Normal Pre-requisites:</i>	An A-level in Mathematics eg Pure and Applied or Pure with Statistics
<i>Lecturer:</i>	Dr L Parnowski
<i>Problem class teacher:</i>	Dr R M Hill

Course Description and Objectives

An introductory course on Mathematical Methods and their Applications for students of Economics, Statistics and related disciplines. The emphasis of the course is on technique rather than full rigour and this is developed through the use of many examples. Topics covered include differentiation, integration, series and functions of several variables matrices.

Detailed Syllabus

Function of a real variable: elementary treatment of continuity and differentiability, differentiation, stationary points, curve sketching including asymptotes and convexity linear approximation.

Methods of integration: substitution, integration by parts, partial fractions, use of hyperbolic and inverse trigonometric functions.

Infinite series: simple treatment of convergence with examples eg geometric series for simple functions: e^x , $\log(1+x)$, trigonometric functions, $(1+x)^\alpha$ for arbitrary α .

Functions of several variables: partial differential, total derivative, chain rule, implicit function theorem, stationary values, maxima, minima and saddle point. Homogenous functions and Eulers theorem.

Matrices and systems of linear equations: solution by reduction to echelon form, geometric interpretation of vectors and matrices, examples of linear dependence and independence, matrix algebra, rank, transpose, inverse. 2×2 and 3×3 determinants.