Mathematics for Economists

**Module Code:** ECO00057M  **Credits:** 10  **Term:** 1 and 2

**Contact Hours:** 16-18 Hours of Lectures; Student Presentations.

**Module Organiser:** Professor Subir Chattopadhyay

**Overview**

The module serves as an introduction to formulating and analysing economic problems in a mathematically rigorous manner. It is aimed primarily at those doctoral students who wish to work in areas in which they will have to read material that is technically demanding. There will be lectures on optimisation, a narrow area that will be studied in some depth, followed by student presentations on topics chosen with the lecturer's approval.

**Aims**

To introduce students to optimisation at an adequate level. Emphasis will be laid on both an intuitive grasp of the material (by using geometry in the exposition and examples) and on formal proofs. The topics covered include elementary analysis, Lagrange's method, convex analysis, separation theorems, Kuhn-Tucker result on local maximisation, concave programming, quasiconcave programming, Euler-Lagrange conditions, discrete time dynamic programming under certainty, and a study of the corresponding Bellman Equation.

**Objectives**

On completing the course of lectures the student is expected to recognize a proof, and to identify the technique appropriate for resolving optimisation problems that one encounters in economics. By extension, the training should permit the student to access other tools from mathematics that are used in economic analysis. The presentations will allow students to develop the technical skills necessary to engage in research in areas of their choice.

**Assessment**

There will be no written examination. 75% of the final mark will be based on the Student’s presentation and answers to questions asked by the lecturer and fellow students; the remaining 25% will be based on a short report on another student's presentation and questions by the lecturer on the report.

If a reassessment is needed, it will take place in August. The format will be as close as practically possible to the structure of the “first attempt”.
Main References


