

ECU33081 — Mathematical Economics A

Module Information	
Module Code	ECU33081
Module Title	Mathematical Economics A
Department	ECONOMICS
Year Group	Junior Sophister
Module Personnel	Dr. Jian Cao
Academic Year	2026-27
Credit Weighting	5 credits
Semester	Semester 1
Contact Hours	20 hours of lectures and 5 hours of tutorials

Module Content	
Module Description	This Junior Sophister module in mathematical economics will cover topics in economic dynamics and optimisation theory. The module will emphasise the practical application of mathematical economics through examples in economic theory and finance. Topics discussed include: • Kuhn-Tucker Optimization in Static and Dynamic Settings • Differential Equations • Difference Equations • Applications of Integration • Approximation Theory • Dynamic Optimization Theory
Module Learning Aims	The module covers topics in optimization in both dynamic and static settings. In particular, one goal of this half of the module is to show how mathematical techniques may be applied to economic modelling. Particular emphasis is placed on the application of advanced mathematical methods to standard neoclassical production and consumption theory.

Module Content

Learning Outcomes	On successful completion of this module, you will be able to: • Formulate economic problems mathematically • Apply mathematical techniques to economic problems in both dynamic and static settings • Interpret mathematical formulations of economic problems • Derive and draw economic insights from solutions to mathematically formulated economic models Satisfactory completion of this module will contribute to the development of the following key skills: • Ability to understand mathematical representations of economic models • Ability to represent economic dynamics in mathematical form • Ability to quantify insights from economic models • Ability to synthesize different mathematical techniques when solving economic problems
Indicative Reading / Resources	Chiang, A.C. and Wainwright, K., Fundamentals of Mathematical Economics (4th ed.), McGraw-Hill, 2005.

Assessment

Assessment Components	• Assignments 10%, • Quizzes 30%, • Term Test 20%, • Final Exam 40%
Assessment Details	None

Additional Information

Prerequisites	ECU22031 & ECU22032 Mathematical and Statistical Methods
Co-requisites	None
Any other information	None