**Mathematical Economics A | ECU33081**

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| Year | Junior Sophister |
| ECTS Credits | 5 |
| Contact Hours | 22 hours of lectures and 5 hours of tutorials |
| Pre-Requisite | ECU22031 & ECU22032 Mathematical and Statistical Methods |
| Semester | 1 |
| Module Leader and Lecturer | Dr Jian Cao |
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**Module Outline:**

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.

Topics Covered Include:

- Kuhn-Tucker Optimization in Static and Dynamic Settings
- Differential Equations
- Difference Equations
- Applications of Integration
- Approximation Theory
- Dynamic Optimization Theory

**Module 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

**Assessment:**

Assignments throughout the semester will account for 30% of the overall grade, a mid-term exam will contribute 30%, and a project will comprise the remaining 40%.

**Recommended Reading List:**

Chiang, A.C. and Wainwright, K., *Fundamentals of Mathematical Economics* (4 th ed.), McGraw-Hill, 2005.

Other Texts TBA