ECON30020 Mathematical Economics

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: Two hours of lectures and a 1-hour tutorial per week Total Time Commitment: Not available
Prerequisites:	One of the following:

Subject	Study Period Commencement:	Credit Points:
ECON20002 Intermediate Microeconomics	Summer Term, Semester 1	12.50
ECON20001 Intermediate Macroeconomics	Semester 2	12.50

Corequisites:	None
Recommended Background Knowledge:	Please refer to Prerequisites and Corequisites.
Non Allowed Subjects:	Students who have completed **316-402 Advanced Microeconomics (/view/2010/316-402)** are not able to take 316-338 Mathematical Economics.
Core Participation Requirements:	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry.The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof Roberto Raimondo
Contact:	**rraim@unimelb.edu.au (mailto:rraim@unimelb.edu.au)**
Subject Overview:	Set theory, univariate calculus and optimisation are reviewed and applied to the theory of the firm and the theory of consumer demand. Linear algebra concepts including matrix operations, vector spaces and quadratic forms are introduced and applied to problems in economics and econometrics. Applications of multivariate calculus including constrained optimisation, the envelope theorem and Kuhn-Tucker conditions are covered.
Objectives:	# Recognise and set up standard economic problems (the consumption decision, the production decision, cost minimization, simple multi-period decision making) as optimization problems # Solve specific optimization problems such as those involving utility and profit maximization and cost minimization # Solve market equilibrium problems # Explain the geometry of constrained optimization, the geometry of Lagrange multipliers; # Explain the difference between necessary and sufficient conditions, and their application at both interior and corner points; # Solve matrix algebra problems including those involving quadratic forms and eigenvalues and vectors, and explain the connection between positive definite forms and convexity; # Solve problems in multivariate calculus, including the calculation of gradients and tangents, and differentiating a function along a curve; # Set up and solve Khun Tucker problems;

	# Explain and interpret Lagrange multipliers as shadow prices; # Solve problems involving simple comparative statics, both for optimization and equilibrium problems, using the univariate implicit function theorem, single crossing conditions and envelope methods.
Assessment:	One 2-hour end-of-semester exam (60%) and problem sets not exceeding 4000 words (40%).
Prescribed Texts:	Mathematics for Economics, (2nd edn) (M Hoy, J Livernois, C McKenna, R Rees and T Stengos 2001), MIT Press, 2001, ISBN 0262082942 (hard cover) 0262582074 (paperback)
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2011/B-ARTS)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2011/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/B-MUS)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# High level of development: problem solving; interpretation and analysis; critical thinking. # Moderate level of development: oral communication; written communication; collaborative learning; team work; statistical reasoning; application of theory to practice; receptiveness to alternative ideas. # Some level of development: synthesis of data and other information; evaluation of data and other information; use of computer software; accessing data and other information from a range of sources.
Notes:	Students who have completed **316-402 Advanced Microeconomics (/view/2010/316-402)** are not able to take **316-338 Mathematical Economics (/view/2010/316-338)** .
Related Majors/Minors/ Specialisations:	Economics Major