MAST20018 Discrete Maths and Operations Research

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. Lectures and practice classes.
Time Commitment:	Contact Hours: 3 x one hour lectures per week, 1 x one hour practice class per week Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	One of **Subject** / **Study Period Commencement:** / **Credit Points:** MAST10006 Calculus 2 / Semester 1, Semester 2 / 12.50 MAST10009 Accelerated Mathematics 2 / Semester 2 / 12.50 # 620-120 UMEP Maths for High Achieving Students (prior to 2008) # 620-121 Mathematics A Advanced (prior to 2008) # 620-140 Intermediate Mathematics (prior to 2008) # 620-141 Mathematics A (prior to 2008) Plus one of **Subject** / **Study Period Commencement:** / **Credit Points:** MAST10007 Linear Algebra / Summer Term, Semester 1, Semester 2 / 12.50 MAST10008 Accelerated Mathematics 1 / Semester 1 / 12.50 # MAST10013 UMEP Maths for High Achieving Students # 620-122 Mathematics B Advanced (prior to 2008) # 620-142 Mathematics B (prior to 2009) # 620-211 Mathematics 2 Advanced (prior to 2008)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of # MAST20018 Discrete Maths and Operations Research # 620-261 Introduction to Operations Research (prior to 2009)
Core Participation Requirements:	For the purposes of considering request 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 of 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:	Prof Peter Forrester, Prof Peter Taylor

Contact:	Second Year Coordinator **Email: sycoord@ms.unimelb.edu.au (mailto:sycoord@ms.unimelb.edu.au)**
Subject Overview:	This subject introduces the essential features of operations research methods, and also introduces the area of discrete mathematics as applied to social sciences. Operations research topics include mathematical modelling, linear programming, simplex and revised simplex methods, and duality theory. Discrete mathematics topics include scheduling, voting and fair division. The subject material has a common theme of applications of mathematics in realistic settings encountered in the business world, industry and day-to-day life.
Objectives:	On completion of this subject, students should: # comprehend the essential features of problems encountered in Operations Research investigations, as well as those encountered in Discrete Mathematics applied to social sciences; # develop basic skills required to construct formal mathematical models for practical optimization problems, and those required to analyze settings from the social sciences; # appreciate the extent and limitations of a number of Operations Research techniques with respect to solving real-world optimization problems, and the difficulties which arise in formulating solutions to problems in the social sciences.
Assessment:	Four written assignments due at regular intervals during semester amounting to a total of up to 50 pages (20%), and a 3-hour written examination in the examination period (80%).
Prescribed Texts:	None
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/2012/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2012/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2012/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2012/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:	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis; # collaborative skills: the ability to work in a team; # time management skills: the ability to meet regular deadlines while balancing competing commitments.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course. A basic knowledge of MATLAB such as would be gained by completing any of the following subjects will be assumed. # MAST10007 Linear Algebra # MAST10008 Accelerated Mathematics 1 # 620-142 Mathematics B (prior to 2009)
Related Majors/Minors/ Specialisations:	Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses

	Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.
Related Breadth Track(s):	Accelerated Mathematics