MAST90014 Optimisation for Industry

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. On-campus.
Time Commitment:	Contact Hours: 36 hours comprising 2 one-hour lectures per week and 1 one-hour computer lab/practical class per week. Total Time Commitment: 3 contact hours and 7 hours private study per week.
Prerequisites:	None.
Corequisites:	None.
Recommended Background Knowledge:	It is recommended that students have completed a third year subject in linear and non-linear programming (equivalent to 620-362 [2008] Applied Operations Research).
Non Allowed Subjects:	None.
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/
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Subject Overview:	The use of mathematical optimisation is widespread in business, where it is a key management tool for planning and operations. It is also required in many industrial processes and is useful to government and community organizations. This subject will expose students to operations research techniques as used in industry. A heavy emphasis will be placed on the modelling process that turns an industrial problem into a mathematical formulation. The focus will then be on how to solve the resulting mathematical problem. Elementary linear programming and non-linear programming techniques will be reviewed, leading to an introductory treatment of integer programming techniques.
Objectives:	After completing this subject students should: - have learned how basic techniques in operations research are applied in industry; - understand how to turn an industrial problem into a mathematical formulation; - know how to solve important mathematical optimisation problems arising in industrial framework; - gain the ability to pursue further studies in this and related areas.
Assessment:	Up to 60 pages of written assignments (60%: two assignments worth 30% each, due mid and late in semester), a two-hour written examination (40%, in the examination period).
Prescribed Texts:	TBA
Recommended Texts:	None.
Breadth Options:	This subject is not available as a breadth subject.

Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Upon completion of this subject, students should develop: - problem-solving skills (especially through tutorial exercises and assignments) including engaging with unfamiliar problems and identifying relevant strategies; - analytical skills including the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of the analysis; - ability to work in a team, through interactions with other students.
Related Course(s):	Master of Science (Management Science) Master of Science (Mathematics and Statistics)