MAST90014 Optimisation for Industry

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2011, 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 [2009] Applied Operations Research or 620-361 Techniques in 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 analytical tool for managing and planning business 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. Mathematical programming and (meta)-heuristic techniques will be reviewed and applied to selected problems.
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:	One written assignment (20%, due mid semester), one group project (40% including one group report and one group presentation, due 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:	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.
Related Course(s):	Master of Operations Research and Management Science Master of Science (Mathematics and Statistics)