620-261 Introduction to Operations Research

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 36 lectures (three per week) and 11 tutorial/practice class hours (one per week) Total Time Commitment: 120 hours
Prerequisites:	One of [07]620-122, [08]620-142, [05]620-192, [05]620-194, [07]620-211.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Prof P Taylor
Subject Overview:	This subject introduces the essential features of operations research methods and the type of problems they can solve; it develops a number of basic mathematical techniques used to solve typical generic problems and the theoretical foundations of these techniques. Students should develop the ability to construct formal mathematical models for practical optimisation problems, to solve linear programming problems and to assess the results, to use dynamic programming techniques in the modelling analysis and solution of operations research problems, and to conduct sensitivity analysis in the context of a number of operations research problems. This subject demonstrates the extent and limitations of operations research techniques such as linear programming, dynamic programming and sensitivity analysis in the context of real-world problems. It also shows the essential role that standard mathematical tools and computers play in the analysis and solutions of operations research problems. Selected topics from mathematical modelling, linear programming, simplex and revised simplex methods, duality theory, sensitivity analysis, dynamic programming, the transportation problem, shortest path and critical path problems, and knapsack problems will be studied. Students will also look at the applications of operations research techniques to real-world problems and the use of computer packages and Internet resources will be covered.
Assessment:	Up to 36 pages of written assignments due during the semester (10%); a 3-hour written examination in the examination period (90%).
Prescribed Texts:	None
Breadth Options:	This subject is a level 2 or level 3 subject and is not available to new generation degree students as a breadth option in 2008. This subject or an equivalent will be available as breadth in the future. Breadth subjects are currently being developed and these existing subject details can be used as guide to the type of options that might be available. 2009 subjects to be offered as breadth will be finalised before re-enrolment for 2009 starts in early October.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	This subject is available for science credit to students enrolled in the BSc (pre-2008 degree only), BASc or a combined BSc course.

Related Course(s):	Bachelor of Arts