433-253 Algorithms and Data Structures

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. On-campus
Time Commitment:	Contact Hours: Twenty-four hours of lectures, 11 hours of tutorials, 11 hours of practice classes Total Time Commitment: Not available
Prerequisites:	433-151 Introduction to Programming (Advanced) or 433-171 Introduction to Programming, and 433-152 Algorithmic Problem Solving (Advanced) or 433-172 Algorithmic Problem Solving, and two subjects (25 points) of first-year mathematics
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	433-253 Algorithms and data Structures; COMP20003 Algorithms and Data Structures.
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Dr Anthony Ian Wirth
Subject Overview:	Topics covered include complexity classes and asymptotic notations; empirical analysis of algorithms; abstract data types including queues, trees, heaps and graphs; algorithmic techniques including brute force, divide-and-conquer, dynamic programming and greedy approaches; space and time trade-offs; and the theoretical limits of algorithm power.
Objectives:	On completion of this subject students should understand the fundamentals of algorithm design, including algorithm analysis, abstract data types, and techniques for algorithmic problem solving. Students will be able to apply this understanding to analyse new problems and develop programs that solve them, expressed in an imperative or functional programming language.
Assessment:	Project work during semester, expected to take about 36 hours (30%); and a 3-hour end-of-semester written examination (70%). To pass the subject, students must obtain at least 50% overall, 15/30 in project work, and 35/70 in the written examination.
Prescribed 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:	On successful completion students should have: # an ability to apply knowledge of basic science and engineering fundamentals

	# an ability to communicate effectively, not only with engineers but also with the community at large # an in-depth technical competence in at least one engineering discipline # an ability to undertake problem identification, formulation and solution # an openness to new ideas and unconventional critiques of received wisdom # a profound respect for truth and intellectual integrity, and for the ethics of scholarship
Notes:	Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject. This subject is offered for the last time in Semester 1, 2009 and will be replaced by COMP20003 of the same name in Semester 2, 2009.
Related Course(s):	Bachelor of Computer Science Bachelor of Engineering (Biomedical)Bioinformatics Bachelor of Engineering (Computer Engineering)/Bachelor of Science Bachelor of Engineering (Computer) and Bachelor of Arts Bachelor of Engineering (Computer) and Bachelor of Commerce Bachelor of Engineering (Computer) and Bachelor of Laws Bachelor of Engineering (Electrical Engineering)/Bachelor of Science Bachelor of Engineering (EngineeringManagement) Computer Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science
Related Majors/Minors/ Specialisations:	Computer Science Major Logic and Philosophy of Science