

## 433-253 Algorithms and Data Structures

<b>Credit Points:</b>	12.500
<b>Level:</b>	Undergraduate
<b>Dates &amp; Locations:</b>	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus. Semester 2, - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: Twenty-four hours of lectures, 11 hours of tutorials, 11 hours of practice classes Total Time Commitment: Not available
<b>Prerequisites:</b>	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
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	<p>&lt;p&gt;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.&lt;/p&gt; <p>&lt;p&gt;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: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p> </p>
<b>Subject Overview:</b>	<p>The objective of this subject is for students to 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.</p> <p>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.</p>
<b>Assessment:</b>	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.
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># ability to apply knowledge of basic science and engineering fundamentals</li> <li># ability to communicate effectively, not only with engineers but also with the community at large</li> <li># in-depth technical competence in at least one engineering discipline</li> <li># ability to undertake problem identification, formulation and solution</li> </ul>

	<p># openness to new ideas and unconventional critiques of received wisdom</p> <p># profound respect for truth and intellectual integrity, and for the ethics of scholarship</p>
<b>Notes:</b>	Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject.
<b>Related Course(s):</b>	<p>Bachelor of Arts</p> <p>Bachelor of Computer Science</p> <p>Bachelor of Computer Science (Bioinformatics)</p> <p>Bachelor of Computer Science and Bachelor of Laws</p> <p>Bachelor of Engineering (Biomedical)Bioinformatics</p> <p>Bachelor of Engineering (Computer Engineering)</p> <p>Bachelor of Engineering (EngineeringManagement) Computer</p> <p>Bachelor of Engineering (EngineeringManagement) Software</p> <p>Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science</p> <p>Bachelor of Engineering (Software Engineering)</p> <p>Graduate Diploma in Arts (Logic and Philosophy of Science)</p>