

COMP20004 Discrete Structures

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. On campus
Time Commitment:	Contact Hours: 2 one-hour lectures; 1 two-hour workshop (per week) Total Time Commitment: 120 hours
Prerequisites:	One first year mathematics subject (12.5 points).
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	433-255 Logic and Computation
Core Participation Requirements:	For the purposes of considering request 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 of 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/
Coordinator:	Assoc Prof Harald Sondergaard
Contact:	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles + 61 3 9349 2182 + 61 3 8344 7707 Email eng-info@unimelb.edu.au (mailto:eng-info@unimelb.edu.au)
Subject Overview:	Formal logic and discrete mathematics provide the theoretical foundations for computer science. This subject is an introduction to the science of computing. It provides a grounding in the theories of logic, automata and formal languages, providing concepts that underpin virtually all the practical tools contributed by the discipline, for automated storage, retrieval, manipulation and communication of data. Topics include: sets, functions, relations, and combinatorics; propositional and predicate logic; proof principles; induction and recursion, well-ordering; regular languages, finite-state automata, context-free grammars and languages, pumping lemmas, parsing.
Objectives:	On successful completion of the subject students should be able to: <ul style="list-style-type: none"> # Use fundamental concepts and formalisms for reasoning about computation # Reason formally about models of computation, simple specifications and programs # Apply discrete mathematical techniques to problems in computer science; and # Design state machines for a range of computational problems
Assessment:	Project work during the semester, expected to take about 24 hours (20%); two homework sets, one during each half of the semester, expected to take 8 hours each (20%); and a 2-hour end-

	of-semester written examination (60%). To pass the subject, students must obtain at least 50% overall, and at least 30/60 in the written examination.
Prescribed Texts:	K. Doets and J. van Eijck. The Haskell Road to Logic, Maths and Programming. King's College Publ., 2004.
Recommended Texts:	M. Sipser. Introduction to the Theory of Computation. Thomson Course Technology, second edition, 2006.
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2010/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On successful completion of this subject students should have:</p> <ul style="list-style-type: none"> # Ability to apply knowledge of basic science and engineering fundamentals # Ability to communicate effectively, not only with engineers but also with the community at large # In-depth technical competence in at least one engineering discipline; and # Ability to undertake problem identification, formulation and solution
Notes:	<p>This subject is available as breadth in the following Bachelors courses: Arts, Commerce, Environments and Music.</p> <p>Students taking this subject will be expected to regularly access an internet-enabled computer.</p> <p>This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BAsC or a combined BSc course.</p>
Related Course(s):	<p>Bachelor of Engineering Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Science</p>
Related Majors/Minors/Specialisations:	Master of Engineering (Software)