SWEN40004 Modelling Complex Software Systems

Credit Points:	12.50
Level:	4 (Undergraduate)
Dates & Locations:	2013, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours, comprising of two 1-hour lectures and one 1-hour workshop per week Total Time Commitment: 120 hours
Prerequisites:	<table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>COMP20004 Discrete Structures</td><td>Not offered 2013</td><td>12.50</td></tr></table> AND ONE of the following: <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>COMP20003 Algorithms and Data Structures</td><td>Not offered 2013</td><td>12.50</td></tr><tr><td>COMP90038 Algorithms and Complexity</td><td>Not offered 2013</td><td>12.50</td></tr></table> OR 433-253 Algorithms & Data Structures
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students cannot enrol in and gain credit for this subject and: 433-441 Systems Modelling and Analysis 433-641 Systems Modelling and Analysis
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 Timothy Miller
Contact:	Email: **tmiller@unimelb.edu.au (mailto:tmiller@unimelb.edu.au)**
Subject Overview:	Mathematical modelling is important for understanding many facets of digital complex systems. The aim of this subject is for students to understand the range and use of mathematical theories and notations in the analysis of discrete systems. Topics covered will be selected from: logic; probability and stochastic modeling; model-oriented methods for systems analysis; the use of

	automata, process algebra, and Petri nets in the analysis of concurrent systems; dynamical systems, networks and the analysis of complex systems.
Objectives:	On completion of this subject students should be able to: # To select from a range of techniques with which to model discrete systems # To select analysis techniques and perform analysis on discrete systems # Have the theoretical basis for understanding modern analytical techniques and the skill to solve problems using those techniques
Assessment:	Project work expected to take about 36 hours during the semester (50%) 3-hour examination held in the examination period (50%) Hurdle Requirement: To pass the subject students must obtain at least: 25/50 in project work, and 25/50 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 completion of this subject students should have the: # Ability to undertake problem identification, formulation and solution # Ability to utilise a systems approach to analysing software properties # Capacity for independent critical analysis of models, and self-directed research for mathematical modelling approaches # Intellectual curiosity and creativity, including understanding of the philosophical and methodological ideas behind research in software systems analysis # Openness to new ideas and unconventional critiques of received wisdom
Related Course(s):	Master of Information Technology Master of Information Technology Master of Information Technology
Related Majors/Minors/ Specialisations:	B-ENG Software Engineering stream Master of Engineering (Software)