

# SWEN40004 Modelling Complex Software Systems

<b>Credit Points:</b>	12.50														
<b>Level:</b>	4 (Undergraduate)														
<b>Dates &amp; Locations:</b>	This subject is not offered in 2011.														
<b>Time Commitment:</b>	Contact Hours: 36 hours consisting of 24 one-hour lectures (two per week) and 12 one-hour workshops (one per week) Total Time Commitment: 120 hours														
<b>Prerequisites:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>COMP20004 Discrete Structures</td> <td>Not offered 2011</td> <td>12.50</td> </tr> </tbody> </table> <p>AND</p> <p>ONE of the following:</p> <p>433-253 Algorithms &amp; Data Structures</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>COMP20003 Algorithms and Data Structures</td> <td>Not offered 2011</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	COMP20004 Discrete Structures	Not offered 2011	12.50	Subject	Study Period Commencement:	Credit Points:	COMP20003 Algorithms and Data Structures	Not offered 2011	12.50
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COMP20004 Discrete Structures	Not offered 2011	12.50													
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COMP20003 Algorithms and Data Structures	Not offered 2011	12.50													
<b>Corequisites:</b>	None														
<b>Recommended Background Knowledge:</b>	None														
<b>Non Allowed Subjects:</b>	433-441 Systems Modelling and Analysis 433-641 Systems Modelling and Analysis														
<b>Core Participation Requirements:</b>	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: <a href="http://www.services.unimelb.edu.au/disability">http://www.services.unimelb.edu.au/disability</a>														
<b>Contact:</b>	Dr Shanika Karunasekera email: <a href="mailto:karus@unimelb.edu.au">karus@unimelb.edu.au</a> ( <a href="mailto:karus@unimelb.edu.au">mailto:karus@unimelb.edu.au</a> )														
<b>Subject Overview:</b>	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.														
<b>Objectives:</b>	On completion of this subject students should be able to: <ul style="list-style-type: none"> <li># To select from a range of techniques with which to model discrete systems</li> <li># To select analysis techniques and perform analysis on discrete systems</li> <li># Have the theoretical basis for understanding modern analytical techniques and the skill to solve problems using those techniques</li> </ul>														
<b>Assessment:</b>	Between 3 and 6 modelling and analysis problems (the exact number is determined by the student) submitted during semester time (50%); and a 3-hour end-of-semester written examination (50%). To pass the subject, students must obtain 25/50 in modelling problems, and 25/50 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>	<p>On completion of this subject students should have the:</p> <ul style="list-style-type: none"><li># Ability to undertake problem identification, formulation and solution</li><li># 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</li><li># Intellectual curiosity and creativity, including understanding of the philosophical and methodological ideas behind research in software systems analysis</li><li># Openness to new ideas and unconventional critiques of received wisdom</li></ul>
<b>Related Majors/Minors/ Specialisations:</b>	B-ENG Software Engineering stream Master of Engineering (Software)