

# MAST30011 Graph Theory

<b>Credit Points:</b>	12.50									
<b>Level:</b>	3 (Undergraduate)									
<b>Dates &amp; Locations:</b>	This subject is not offered in 2013. Lectures and practice classes.									
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week, 1 x one hour practice class per week Total Time Commitment: Estimated total time commitment of 120 hours									
<b>Prerequisites:</b>	<p>One of</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST20026 Real Analysis</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>MAST10009 Accelerated Mathematics 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>and any other second year level subject from the Department of Mathematics and Statistics</p>	Subject	Study Period Commencement:	Credit Points:	MAST20026 Real Analysis	Not offered 2013	12.50	MAST10009 Accelerated Mathematics 2	Not offered 2013	12.50
Subject	Study Period Commencement:	Credit Points:								
MAST20026 Real Analysis	Not offered 2013	12.50								
MAST10009 Accelerated Mathematics 2	Not offered 2013	12.50								
<b>Corequisites:</b>	None									
<b>Recommended Background Knowledge:</b>	None									
<b>Non Allowed Subjects:</b>	None									
<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>	<p>Third Year Coordinator</p> <p><b>Email: <a href="mailto:tycoord@ms.unimelb.edu.au">tycoord@ms.unimelb.edu.au</a> (mailto:tycoord@ms.unimelb.edu.au)</b></p>									
<b>Subject Overview:</b>	<p>Graphs model networks of all types such as telecommunication, transport, computer and social networks. They also model physical structures such as crystals and abstract structures within computer algorithms.</p> <p>This subject is an introduction to the modern field of graph theory. It emphasises the relationship between proving theorems in mathematics and the construction of algorithms to find the solutions of mathematical problems within the context of graph theory. The subject provides material that supplements other areas of study such as operations research, computer science and discrete mathematics</p>									
<b>Objectives:</b>	<p>On completion of this subject, students should:</p> <ul style="list-style-type: none"> <li># Be familiar with the definitions and basic theory of graphs;</li> <li># Be able to implement many of the standard algorithms of graph theory;</li> <li># Be able to prove simple results in graph theory.</li> </ul>									
<b>Assessment:</b>	Two written assignments due mid-semester and at the end of semester amounting to a total of up to 50 pages (20%), and a 3-hour written examination in the examination period (80%).									
<b>Prescribed Texts:</b>	None									
<b>Recommended Texts:</b>	G. Chartrand and O.R. Oellerman, Applied and Algorithmic Graph Theory, McGraw-Hill, 1993, Freeman, 1998.									

<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ARTS">https://handbook.unimelb.edu.au/view/2013/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-COM">https://handbook.unimelb.edu.au/view/2013/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-ENVS">https://handbook.unimelb.edu.au/view/2013/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2013/B-MUS">https://handbook.unimelb.edu.au/view/2013/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<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>In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include:</p> <ul style="list-style-type: none"> <li># problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;</li> <li># analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis;</li> <li># collaborative skills: the ability to work in a team;</li> <li># time-management skills: the ability to meet regular deadlines while balancing competing commitments.</li> </ul>
<b>Notes:</b>	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.
<b>Related Majors/Minors/Specialisations:</b>	<p>Applied Mathematics  Applied Mathematics  Applied Mathematics (specialisation of Mathematics and Statistics major)  Discrete Mathematics / Operations Research  Discrete Mathematics / Operations Research  Discrete Mathematics and Operations Research (specialisation of Mathematics and Statistics major)  Pure Mathematics  Pure Mathematics  Pure Mathematics (specialisation of Mathematics and Statistics major)  Science credit subjects* for pre-2008 BSc, BAsC and combined degree science courses  Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.</p>