

# MAST10008 Accelerated Mathematics 1

<b>Credit Points:</b>	12.50
<b>Level:</b>	1 (Undergraduate)
<b>Dates &amp; Locations:</b>	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Lectures, practice classes and computer laboratory classes.
<b>Time Commitment:</b>	Contact Hours: 4 x one hour lectures per week, 1 x one hour practice class per week, 1 x one hour computer laboratory class per week Total Time Commitment: Estimated total time commitment of 120 hours
<b>Prerequisites:</b>	A study score of at least 38 in VCE Specialist Mathematics 3/4 or equivalent; or <b>620-158 Accelerated Mathematics 2</b> ( <a href="#">/view/2010/620-158</a> ) ; or permission from the Director of the Mathematics and Statistics Learning Centre.
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	Students may only gain credit for one of <ul style="list-style-type: none"> <li># <b>620-156 Linear Algebra</b> (<a href="#">/view/2010/620-156</a>)</li> <li># 620-157 Accelerated Mathematics 1</li> <li># 620-122 Mathematics B Advanced (prior to 2008)</li> <li># 620-142 Mathematics B (prior to 2009)</li> <li># 620-190 UMEP Mathematics for High Achieving Students</li> <li># 620-192 Mathematics B (prior to 2006)</li> <li># 620-194 Mathematics B Advanced (prior to 2006)</li> <li># 620-211 Mathematics 2 Advanced (prior to 2008)</li> </ul>
<b>Core Participation Requirements:</b>	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
<b>Coordinator:</b>	Dr Paul Norbury
<b>Contact:</b>	First Year Coordinator <b>Email: <a href="mailto:fycoord@ms.unimelb.edu.au">fycoord@ms.unimelb.edu.au</a> (<a href="mailto:fycoord@ms.unimelb.edu.au">mailto:fycoord@ms.unimelb.edu.au</a>)</b>
<b>Subject Overview:</b>	<p>This subject develops the concepts of vectors, matrices and the methods of linear algebra and introduces students to differentiation and integration of functions of two variables. Students will be exposed to methods of mathematical proof. Little of the material here has been seen at school and the level of understanding required represents an advance on previous studies. Underlying concepts developed in lectures will be reinforced in computer laboratory classes.</p> <p>Topics covered include systems of linear equations, matrices and determinants, vector geometry, lines and planes, vector spaces, subspaces, linear independence, bases, dimension, inner products, linear transformations, eigenvalues and eigenvectors, complex eigenvalues and exponentials as well as techniques of proof, partial derivatives, chain rule for partial derivatives, directional derivatives, tangent planes, extrema for functions of several variables and double integrals.</p>

<b>Objectives:</b>	<p>Students completing this subject should:</p> <ul style="list-style-type: none"> <li># be able to use matrix techniques to represent and solve a system of simultaneous linear equations;</li> <li># understand the extension of vector concepts to abstract vector spaces of arbitrary finite dimension;</li> <li># understand linear transformations, their matrix representations and applications;</li> <li># be able to differentiate and integrate functions of two variables;</li> <li># be able to do a simple mathematical proof.</li> </ul>
<b>Assessment:</b>	<p>Three written assignments due at regular intervals during semester amounting to a total of up to 25 pages (9%), three online assessment tasks due at regular intervals during semester (6%), a 45-minute computer laboratory test held at the end of semester (5%), and a 3-hour written examination in the examination period (80%).</p>
<b>Prescribed Texts:</b>	<p>Elementary Linear Algebra, Applications Version (H. Anton and C. Rorres), 9th edn, Wiley, 2005.</p>
<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/2010/B-ARTS">https://handbook.unimelb.edu.au/view/2010/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-COM">https://handbook.unimelb.edu.au/view/2010/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-ENVS">https://handbook.unimelb.edu.au/view/2010/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-MUS">https://handbook.unimelb.edu.au/view/2010/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>	<p>Subject EFTSL, Level, Discipline &amp; Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a></p>
<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; and</li> <li># computer skills: the ability to use mathematical computing packages.</li> </ul>
<b>Notes:</b>	<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> <p>Previously known as 620-157 Mathematics 1 (prior to 2009)</p> <p>This subject is suitable for students with a high level of achievement in VCE Specialist Mathematics 3/4 or equivalent.</p> <p>This subject, together with <b>620-158 Accelerated Mathematics 2</b> (<a href="http://handbook.unimelb.edu.au/view/2010/620-158">/view/2010/620-158</a>) is equivalent in content to the three subjects</p> <ul style="list-style-type: none"> <li># <b>620-155 Calculus 2</b> (<a href="http://handbook.unimelb.edu.au/view/2010/620-155">/view/2010/620-155</a>)</li> <li># <b>620-156 Linear Algebra</b> (<a href="http://handbook.unimelb.edu.au/view/2010/620-156">/view/2010/620-156</a>)</li> <li># <b>620-295 Real Analysis with Applications</b> (<a href="http://handbook.unimelb.edu.au/view/2010/620-295">/view/2010/620-295</a>)</li> </ul> <p>Students require access to a computer with the software package Matlab installed, currently in every open-access campus laboratory.</p> <p>Students are expected to use the software package Matlab but no programming knowledge is expected.</p>

<b>Related Course(s):</b>	Bachelor of Science
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