

MAST10007 Linear Algebra

Credit Points:	12.50									
Level:	1 (Undergraduate)									
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Summer Term, Parkville - Taught on campus. Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus. Lectures, practice classes and computer laboratory classes.									
Time Commitment:	Contact Hours: Summer Semester: 6 x one hour lectures per week, 2 x one hour practice classes per week, 2 x one hour computer laboratory classes per week. Semester 1 and 2: 3 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									
Prerequisites:	A study score of at least 27 in VCE Specialist Mathematics 3/4, or equivalent, or one of <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST10005 Calculus 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10006 Calculus 2</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <ul style="list-style-type: none"> # 620-151 Introduction to Biomedical Mathematics (prior to 2008) # 620-161 Introductory Mathematics (prior to 2008) 	Subject	Study Period Commencement:	Credit Points:	MAST10005 Calculus 1	Semester 1, Semester 2	12.50	MAST10006 Calculus 2	Semester 1, Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:								
MAST10005 Calculus 1	Semester 1, Semester 2	12.50								
MAST10006 Calculus 2	Semester 1, Semester 2	12.50								
Corequisites:	None									
Recommended Background Knowledge:	None									
Non Allowed Subjects:	Students may only gain credit for one of <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST10007 Linear Algebra</td> <td>Summer Term, Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>MAST10008 Accelerated Mathematics 1</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <ul style="list-style-type: none"> # MAST10013 UMEP Maths for High Achieving Students # 620-122 Mathematics B Advanced (prior to 2008) # 620-142 Mathematics B (prior to 2009) # 620-211 Mathematics 2 Advanced (prior to 2008) <p>Students may not enrol in MAST10005 Calculus 1 and MAST10007 Linear Algebra concurrently.</p>	Subject	Study Period Commencement:	Credit Points:	MAST10007 Linear Algebra	Summer Term, Semester 1, Semester 2	12.50	MAST10008 Accelerated Mathematics 1	Semester 1	12.50
Subject	Study Period Commencement:	Credit Points:								
MAST10007 Linear Algebra	Summer Term, Semester 1, Semester 2	12.50								
MAST10008 Accelerated Mathematics 1	Semester 1	12.50								
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 Craig Hodgson, Dr Lawrence Reeves, Prof Peter Forrester									

Contact:	<p>First Year Coordinator</p> <p>Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)</p>
Subject Overview:	<p>This subject gives a solid grounding in key areas of modern mathematics needed in science and technology. It develops the concepts of vectors, matrices and the methods of linear algebra. Students should develop the ability to use the methods of linear algebra and gain an appreciation 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.</p> <p>Systems of linear equations, matrices and determinants; vectors in real n-space, cross product, scalar triple product, lines and planes; vector spaces, linear independence, basis, dimension; linear transformations, eigenvalues, eigenvectors; inner products, least squares estimation, symmetric and orthogonal matrices.</p>
Objectives:	<p>Students completing this subject should:</p> <ul style="list-style-type: none"> # be able to use matrix techniques to represent and solve a system of simultaneous linear equations; # understand the use of vectors in describing lines and planes in solid geometry; # understand the extension of vector concepts to abstract vector spaces of arbitrary finite dimension; # understand linear transformations, their matrix representations and applications; # become familiar with the use of a computer package for symbolic and numeric calculation.
Assessment:	<p>Summer semester: Five written assignments due at weekly intervals during semester amounting to a total of up to 25 pages (10%), one 45-minute written computer laboratory test held at the end of semester (10%), and a 3-hour written examination in the examination period (80%). Semester 1: Ten written assignments due at weekly intervals during semester amounting to a total of up to 25 pages (10%), one 45-minute written computer laboratory test held at the end of semester (10%), and a 3-hour written examination in the examination period (80%). Semester 2: Ten assignments, either written or online, due at weekly intervals during semester amounting to a total of up to 25 pages (10%), one 45-minute written computer laboratory test held at the end of semester (10%), and a 3-hour written examination in the examination period (80%).</p>
Prescribed Texts:	<p>Elementary Linear Algebra Applications Version (H. Anton and C. Rorres), 10th edn, Wiley, 2010.</p>
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/2012/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2012/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2012/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2012/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:	<p>Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees</p>
Generic Skills:	<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"> # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # 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; # collaborative skills: the ability to work in a team; # time-management skills: the ability to meet regular deadlines while balancing competing commitments; and # computer skills: the ability to use mathematical computing packages.

<p>Notes:</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> <p>Students with a score of 40 or more in VCE Specialist Mathematics 3/4 are strongly encouraged to enrol in both</p> <ul style="list-style-type: none"> # MAST10008 Accelerated Mathematics 1 # MAST10009 Accelerated Mathematics 2 <p>instead of both</p> <ul style="list-style-type: none"> # MAST10006 Calculus 2 # MAST10007 Linear Algebra <p>Students with a study score of 27-29 in VCE Specialist Mathematics 3/4 or equivalent, are eligible to enrol in MAST10005 Calculus 1, MAST10006 Calculus 2 or MAST10007 Linear Algebra. Such students should seek course advice before completing their enrolment.</p> <p>Students require access to a computer with the software package MATLAB installed. This package is currently available in every open-access campus laboratory. Students will be expected to use the software package MATLAB but no programming knowledge is expected.</p> <p>Please note that Prof Peter Forrester coordinates Linear Algebra in Summer Semester and all queries during Summer Semester should be directed to him.</p>
<p>Related Course(s):</p>	<p>Bachelor of Biomedicine Bachelor of Engineering</p>
<p>Related Majors/Minors/ Specialisations:</p>	<p>B-ENG Chemical Engineering stream B-ENG Chemical and Biomolecular Engineering stream B-ENG Civil Engineering stream B-ENG Electrical Engineering stream B-ENG Mechanical Engineering stream B-ENG Software Engineering stream Civil (Engineering) Systems major Environments Discipline subjects Geomatics (Geomatic Engineering) major Physical (Environmental Engineering) Systems 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>
<p>Related Breadth Track(s):</p>	<p>Electrical Engineering Mathematics and Statistics Mathematics for Economics Mechanical Engineering</p>