MAST10008 Accelerated Mathematics 1

Credit Points:	12.5
Level:	1 (Undergraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	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 170 hours
Prerequisites:	A study score of at least 38 in VCE Specialist Mathematics 3/4 or equivalent; or permission from the Director of the Mathematics and Statistics Learning Centre; or

Subject	Study Period Commencement:	Credit Points:
MAST10009 Accelerated Mathematics 2	Semester 2	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of # MAST10007 Linear Algebra # MAST10008 Accelerated Mathematics 1 # MAST10013 UMEP Mathematics for High Achieving Students
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:	Assoc Prof Paul Norbury
Contact:	First Year Coordinator **Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)**
Subject Overview:	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. 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.

Learning Outcomes:	Students completing this subject should: # be able to use matrix techniques to represent and solve a system of simultaneous linear equations; # understand the extension of vector concepts to abstract vector spaces of arbitrary finite dimension; # understand linear transformations, their matrix representations and applications; # be able to differentiate and integrate functions of two variables; # be able to do a simple mathematical proof.
Assessment:	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%).
Prescribed Texts:	None
Recommended Texts:	Elementary Linear Algebra, Applications Version (H. Anton and C. Rorres), 11th edn, Wiley, 2013.
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2015/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2015/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2015/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2015/B-MUS)** 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.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	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: # 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.
Notes:	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. This subject is suitable for students with a high level of achievement in VCE Specialist Mathematics 3/4 or equivalent. This subject, together with MAST10009 Accelerated Mathematics 2is equivalent in content to the three subjects # MAST10006 Calculus 2 # MAST10007 Linear Algebra # MAST20026 Real Analysis Students require access to a computer with the software package MATLAB installed, currently in every open-access campus laboratory.

	Students are expected to use the software package MATLAB but no programming knowledge is expected.
Related Course(s):	Bachelor of Biomedicine
Related Majors/Minors/ Specialisations:	Science-credited subjects - new generation B-SCI and B-ENG. Selective subjects for B-BMED
Related Breadth Track(s):	Accelerated Mathematics