MAST10007 Linear Algebra

Credit Points:	12.50
Level:	1 (Undergraduate)
Dates & Locations:	2010, 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 # **620-154 Calculus 1 (/view/2010/620-154)** # **620-155 Calculus 2 (/view/2010/620-155)** # 620-151 Introduction to Biomedical Mathematics (prior to 2008) # 620-161 Introductory Mathematics (prior to 2008)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of # 620-156 Linear Algebra # **620-157 Accelerated Mathematics 1 (/view/2010/620-157)** # 620-122 Mathematics B Advanced (prior to 2008) # 620-142 Mathematics B (prior to 2009) # 620-190 UMEP Mathematics for High Achieving Students # 620-192 Mathematics B (prior to 2006) # 620-194 Mathematics B Advanced (prior to 2006) # 620-211 Mathematics 2 Advanced (prior to 2008)
Core Participation Requirements:	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.
Coordinator:	Dr John Groves
Contact:	First Year Coordinator **Email: fycoord@ms.unimelb.edu.au (mailto:fycoord@ms.unimelb.edu.au)**
Subject Overview:	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. 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.

Objectives:	Students completing this subject should: # 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:	Summer semester: Five written assignments due at weekly intervals during semester amounting to a total of up to 25 pages (10%), two 45-minute written computer laboratory tests held mid-semester and at the end of semester (10%), and a 3-hour written examination in the examination period (80%).Semester 1 and 2: Ten written assignments due at weekly intervals during semester amounting to a total of up to 25 pages (10%), two 45-minute written computer laboratory tests held mid-semester and at the end of semester (10%), and a 3-hour written examination in the examination period (80%).
Prescribed Texts:	Elementary Linear Algebra Applications Version (H. Anton and C. Rorres), 9th edn, Wiley, 2005.
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/2010/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2010/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/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. Students with a score of 40 or more in VCE Specialist Mathematics 3/4 are strongly encouraged to enrol in both # **620-157 Accelerated Mathematics 1 (/view/2010/620-157)** # **620-158 Accelerated Mathematics 2 (/view/2010/620-158)** instead of both # **620-155 Calculus 2 (/view/2010/620-155)** # 620-156 Linear Algebra

Related Course(s):	Bachelor of Biomedicine Bachelor of Engineering Bachelor of Science
Related Majors/Minors/ Specialisations:	Bioengineering Systems Civil (Engineering) Systems Geomatics Physical (Environmental Engineering) Systems