620-157 Mathematics 1

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus. Lectures, tutorials and computer laboratory classes.
Time Commitment:	Contact Hours: 48 one-hour lectures (four per week), 11 one-hour tutorials (one per week), 11 one-hour computer laboratory classes (one per week). Total Time Commitment: 120 hours
Prerequisites:	Study score of 40 or more in VCE Specialist Mathematics 3/4 or equivalent, or permission from the Director of the Mathematics and Statistics Learning Centre.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of [07]620-122, [08]620-142, 620-156, 620-157, [05]620-192, [05]620-194 or [07]620-211. Students in the combined degree BE/BSc should note that credit exclusions exist between this subject and Engineering mathematics subjects. Refer to entries for 431-201 Engineering Analysis A and 431-202 Engineering Analysis B for details.
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 P Norbury
Subject Overview:	This subject develops the concepts of vectors, matrices, sequences and the methods of linear algebra. Students should 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. Underlying concepts developed in lectures will be reinforced in computer laboratory classes. Systems of linear equations, matrices and determinants, vector geometry, lines and planes, vector spaces, subspaces, linear independence, bases, dimension, inner products, linear transformations, eigenvalues, eigenvectors. Foundations of analysis, techniques of proof and heuristic and rigorous discussion of convergence of sequences. Complex numbers.
Assessment:	Up to 25 pages of written assignments 10% (due during semester), two 45-minute written computer laboratory tests 10% (held during semester), a 3-hour written examination 80% (in the examination period).
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 # Bachelor of Commerce # Bachelor of Environments # Bachelor of Music 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 an appropriate computing package.
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 is the first subject of a three-subject sequence (620-157, 620-158 and 620-2xx Multivariable and Vector Calculus) for students with a very high level of achievement in VCE Specialist Mathematics 3/4 or equivalent. This subject sequence is equivalent, in content, to the four subjects 620-155, 620-156, 620-2xx Vector Calculus and 620-2xx Real Analysis with Applications, presenting some topics from a more advanced perspective.