620-155 Calculus 2

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus. Semester 2, - Taught on campus. Lectures and Tutorials
Time Commitment:	Contact Hours: 36 one-hour lectures (three per week), 12 one-hour tutorials (one per week) Total Time Commitment: 120 hours
Prerequisites:	Study score of 27 or more in VCE Specialist Mathematics 3/4 or equivalent, or one of [07]620-151, 620-154, [07]620-161 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]620-113, [07]620-123, [08]620-143, 620-155, 620-158, [05] 620-193.Students who have completed [07]620-121 may not enrol in this subject for credit.
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 active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr C Mangelsdorf
Subject Overview:	This subject will extend knowledge of calculus from school. Students are introduced to hyperbolic functions and their inverses, the complex exponential and functions of two variables. Techniques of differentiation and integration will be extended to these cases. Students will be exposed to a wider class of differential equation models, both first and second order, to describe systems such as population models, electrical circuits and mechanical oscillators. Calculus: intuitive idea of limits, continuity and differentiability of functions of one variable, hyperbolic functions and their inverses, implicit differentiation, level curves, partial derivatives, chain rules for partial derivatives, directional derivative, tangent planes and extrema for functions of several variables. Complex exponential: definition, derivative, integral and applications. Integration: techniques of integration, arc length and double integrals. Ordinary differential equations: first order (separable, linear via integrating factor) and applications, second order constant coefficient (particular solutions, complementary functions) and applications.
Assessment:	Up to 25 pages of written assignments 10% (due during semester), a 45-minute written test 10% (held mid-semester), a 3-hour written examination 80% (in the examination period).
Prescribed Texts:	Calculus: Early Transcendentals (H. Anton, I. Bivens and S. Davis), 8th 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; and # time-management skills: the ability to meet regular deadlines while balancing competing commitments.
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 Specialist Mathematics 3/4 will normally not be permitted to enrol in this subject; such students should enrol in 620-157.
Related Course(s):	Bachelor of Engineering (Chemical Engineering) Bachelor of Engineering (Chemical and Biomolecular Engineering) Bachelor of Engineering (Civil Engineering) Bachelor of Engineering (Electrical Engineering) Bachelor of Engineering (Mechanical and Manufacturing Engineering) Bachelor of Engineering (Software Engineering)