

# 620-154 Calculus 1

<b>Credit Points:</b>	12.500
<b>Level:</b>	Undergraduate
<b>Dates &amp; Locations:</b>	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus. Semester 2, - Taught on campus. Lectures and tutorials
<b>Time Commitment:</b>	Contact Hours: 36 one-hour lectures (three per week), 12 one-hour tutorials (one per week). Total Time Commitment: 120 hours
<b>Prerequisites:</b>	Study score of 25 or more in VCE Mathematical Methods 3/4 or equivalent, or 620-173 Introduction to Mathematics.
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	Students may only gain credit for one of [07]620-151, 620-154, [07]620-161. Students who have completed [07]620-121, [07]620-140 or [07]620-141 may not enrol in this subject for credit.
<b>Core Participation Requirements:</b>	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.
<b>Coordinator:</b>	Dr D King
<b>Subject Overview:</b>	This subject extends students' knowledge of functions and calculus and introduces them to the topics of vectors and complex numbers. Students will be introduced to new functions such as the inverse trigonometric functions and learn how to extend the techniques of differentiation to these. Integration techniques will be applied to solving first order differential equations.  Differential calculus: graphs of functions of one variable, trigonometric functions and their inverses, derivatives of inverse trigonometric functions, implicit differentiation, related rates. Integral calculus: integration by trigonometric and algebraic substitutions and partial fractions with application to areas and volumes. Ordinary differential equations: slope fields, solution of simple first order differential equations arising from applications such as population modelling. Vectors: dot product, scalar and vector projections, plane curves specified by vector equations. Complex numbers: arithmetic of complex numbers, sketching regions in the complex plane, De Moivre's Theorem, roots of polynomials, the Fundamental Theorem of Algebra.
<b>Assessment:</b>	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).
<b>Prescribed Texts:</b>	Calculus: Early Transcendentals (H. Anton, I. Bivens and S.Davis), 8th edition, Wiley, 2005.
<b>Breadth Options:</b>	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 <b>learn more about breadth subjects</b> ( <a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a> ) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.

<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<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"> <li># problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies;</li> <li># 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;</li> <li># collaborative skills: the ability to work in a team; and</li> <li># time-management skills: the ability to meet regular deadlines while balancing competing commitments.</li> </ul>
<b>Notes:</b>	<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 27 or more in Specialist Mathematics 3/4 will normally not be permitted to enrol in this subject; such students should enrol in one of 620-155, 620-156 or 620-157.</p>
<b>Related Course(s):</b>	<p>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)</p>