

620-252 Analysis

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. Lectures and practice classes.
Time Commitment:	Contact Hours: 36 one-hour lectures (three per week), 11 one-hour practice classes (one per week) Total Time Commitment: 120 hours total time commitment.
Prerequisites:	One of <ul style="list-style-type: none"> # 620-122 (prior to 2008) # 620-142 (prior to 2009) # 620-192 (prior to 2006), # 620-194 (prior to 2006), # 620-211 (prior to 2008); and one of <ul style="list-style-type: none"> # 620-113 (prior to 2008), # 620-123 (prior to 2008), # 620-143 (prior to 2009), # 620-193 (prior to 2006).
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of 620-221 (prior to 2009) and <i>Analysis</i> .
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 Omar Foda
Subject Overview:	<p>This subject deals with convergence of sequences and series; elementary topology of the real line; the fundamentals of continuity, and differentiability of functions of several real variables; analytic functions of a complex variable; complex derivative; power and Laurent series in complex variables; basic topological concepts in the complex plane; and Cauchy's theorem and its applications. Students completing this subject develop the ability to determine the convergence or otherwise of sequences and series; differentiate functions of a complex variable; calculate contour integrals; work with analytic functions in the cut plane; and apply Cauchy's integral formula and the residue theorem. The subject demonstrates the differences between functions of a real and a complex variable; and the role of complex analytic methods in solving important problems in science and engineering.</p> <p>Sequences and series topics include standard sequences and series, Cauchy convergence, ratio and nth root tests, absolute and conditional convergence, re-arrangements and power series. Continuity topics include continuity and differentiability of functions of several real variables. Functions of a complex variable topics include elementary functions of a complex variable, branches, differentiation, analytic functions and Cauchy-Riemann equations. Integration topics include line and contour integrals, and Cauchy's integral theorem; Laurent series; singularities, poles and Liouville's theorem; and residue theorem, limiting contours, and evaluation of integrals using contour integration.</p>

Objectives:	.
Assessment:	Up to 36 pages of written assignments due during the semester (0% or 15%); a 3-hour written examination in the examination period (85% or 100%). The relative weighting of the examination and the total assignment mark will be chosen so as to maximise the student's final mark.
Prescribed Texts:	None
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05) <p>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.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	This subject is available for science credit to students enrolled in the BSc (pre-2008 degree only), BAsc or a combined BSc course.
Related Majors/Minors/Specialisations:	Mathematics & Statistics Major