

620-312 Linear Analysis

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| Credit Points: | 12.500 |
| Level: | Undergraduate |
| Dates & Locations: | 2008, This subject commences in the following study period/s: Semester 2, - Taught on campus. |
| Time Commitment: | Contact Hours: 36 lectures (three per week) and up to 12 practice classes (one per week) Total Time Commitment: 120 hours |
| Prerequisites: | 620-311. |
| Corequisites: | None |
| Recommended Background Knowledge: | None |
| Non Allowed Subjects: | None |
| 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: | A/Prof J Koliha |
| Subject Overview: | <p>The most important topic of this subject is integration. Students meet this concept in a calculus course where an integral is defined as a Riemann integral. Although a Riemann integral is useful in many areas of mathematics, it is not adequate for many problems of modern analysis. The aim of the subject is to introduce students to the Lebesgue theory of integration and measure theory. Included in this subject is an introduction to the fundamental concepts of functional analysis. Functional analysis is the common name for the study of infinite dimensional vector spaces and the linear maps between them. What distinguishes this subject from linear algebra is the role of topological considerations. These topics are not only beautiful and interesting but are also useful in other branches of mathematics such as probability theory, partial differential equations and quantum mechanics.</p> <p>Topics include construction of measures, measurable functions, Lebesgue integrals, convergence theorems, L_p-spaces, Fubini's theorem, normed spaces and Banach spaces, inner product and Hilbert spaces, linear functionals and linear operators.</p> |
| Assessment: | Up to 36 pages of written assignments due during the semester (either 0% or 20%); a 3-hour written examination in the examination period (80% or 100%). The relative weighting of the examination and the assignments will be chosen so as to maximise the student's final mark. |
| Prescribed Texts: | None |
| Breadth Options: | <p>This subject is a level 2 or level 3 subject and is not available to new generation degree students as a breadth option in 2008.</p> <p>This subject or an equivalent will be available as breadth in the future.</p> <p>Breadth subjects are currently being developed and these existing subject details can be used as guide to the type of options that might be available.</p> <p>2009 subjects to be offered as breadth will be finalised before re-enrolment for 2009 starts in early October.</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 Course(s): | Bachelor of Arts Bachelor of Arts and Bachelor of Science |

Bachelor of Arts and Sciences
Bachelor of Science