

620-321 Algebra

Credit Points:	12.50
Level:	3 (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) and up to 12 one-hour practice classes (one per week) Total Time Commitment: 120 hours total time commitment
Prerequisites:	620-222 (prior to 2009) with a grade of H3 or better.
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:	Dr Lawrence Reeves
Subject Overview:	<p>This subject provides further experience with abstract algebraic concepts and methods. General structural results are proved and algorithms developed to determine the invariants they describe. The material covered is widely used in algebraic topology and in number theory.</p> <p>Rings topics include: abstract rings and isomorphisms; matrix rings and polynomial rings; homomorphisms, ideals and quotient rings; integral domains and the field of quotients; units, irreducibles and primes; prime and maximal ideals; Euclidean domains; principal ideal domains; and unique factorisation domains. Modules topics include: submodules; homomorphisms of modules and quotient modules; free modules and bases; the structure of a finitely generated module over a principal ideal domain; and applications to abelian groups and to Jordan normal form of matrices. Field theory topics include: field extensions and their construction; the degree of a field extension; Galois extensions, splitting fields and the Galois correspondence. Applications topics may include tensor and exterior algebras, applications to number theory, the classical impossibility theorems, and structure theory for simple rings.</p>
Objectives:	.
Assessment:	Up to 24 pages of written assignments due during semester (20%); a 3-hour written examination in the examination period (80%).
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 Mathematics and Statistics (Pure Mathematics specialisation)