MAST90025 Commutative Algebra

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. On-campus
Time Commitment:	Contact Hours: 36 hours comprising 2 one-hour lectures per week and 1 one-hour practice class per week. Total Time Commitment: 3 contact hours plus 7 hours private study per week.
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	It is recommended that students have completed a third year subject in algebra (equivalent to 620-321 [2008] Algebra).
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry.The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Dr Paul Norbury
Contact:	Email: **jrjg@unimelb.edu.au (mailto:jrjg@unimelb.edu.au)**
Subject Overview:	Commutative algebra is the basis of modern algebraic geometry. It provides the rigorous foundation for the study of curves and surfaces and their generalisations. Students will study: basic properties of rings, basic properties of modules including Nakayama's Lemma; Hom and tensor; Localisation; Noetherian properties and the Hilbert Basis theorem; Associated primes and primary decomposition; Grobner bases; Integral extensions; extension of primes in integral extensions; the Hilbert Nullstellensatz; Extended applications taken from Algebraic Geometry and Algebraic Number Theory.
Objectives:	After completing this subject, students should gain: - a deeper understanding of the theory of rings and modules; - an understanding of the basic concepts of Commutative Algebra such as localisation, Noetherian, associated primes and integral extensions; - an understanding of how these basic concepts apply in an area of mathematics other than algebra; - an understanding of proof-producing skills in an algebraic context and to assist in refining the presentation of the consequent proofs; - the ability to pursue further studies in this and related areas.
Assessment:	Up to 60 pages of written assignments (75%: three assignments worth 25% each, due early, mid and late in semester), a 2 hour written examination (25%, in the examination period).
Prescribed Texts:	TBA
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Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Upon completion of this subject, students should gain the following generic skills:

	- Problem-solving skills including the ability to engage with unfamiliar problems and identify relevant solution strategies - Analytical skills through the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis - Through interactions with other students, the ability to work in a team - Time management skills: the ability to meet regular deadlines while balancing competing commitments
Related Course(s):	Master of Science (Mathematics and Statistics)