620-630 Algebraic Geometry

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus. On-campus
Time Commitment:	Contact Hours: 36 hours comprising 2 one-hour lectures per week and 1 one-hour computer lab/practical 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 subject equivalent to 620636 Commutative Algebra.
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 participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr Paul Timothy Norbury
Subject Overview:	Algebraic geometry is the study of the zero sets of polynomials. As the name suggests, it combines algebra and geometry. It is a fundamental tool in many areas of mathematics, including differential geometry, number theory, integrable systems and in physics, such as string theory. Syllabus: Plane conics, cubics and the group law, genus of a curve, commutative algebra Noetherian rings, Zariski topology, the Nullstellensatz, coordinate ring of functions on a variety, projective varieties, singularities, divisors, Riemann Roch theorem.
Objectives:	After completing this subject, students should gain: - an appreciation of the geometry underlying commutative algebra, e.g. the geometry of the zero set of a polynomial; - an understanding of the Nullstellensatz; - a fundamental understanding of projective varieties; - experience with the Zariski topology; - applications of algebraic geometry to related areas such as differential geometry, number theory and physics. - the ability to pursue further studies in this and related areas.
Assessment:	Up to 60 pages of written assignments (60%: three assignments worth 20% each, due early, mid and late in semester), a 2 hour written examination (40%, 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 Majors/Minors/ Specialisations:	R05 RM Master of Science - Mathematics and Statistics