

MAST90097 Algebraic Geometry

Credit Points:	12.5									
Level:	9 (Graduate/Postgraduate)									
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.									
Time Commitment:	Contact Hours: 36 hours comprising three 1-hour lectures per week Total Time Commitment: 170 hours									
Prerequisites:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MAST30005 Algebra</td> <td>Semester 1</td> <td>12.5</td> </tr> <tr> <td>MAST90025 Commutative and Multilinear Algebra</td> <td>Semester 1</td> <td>12.5</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	MAST30005 Algebra	Semester 1	12.5	MAST90025 Commutative and Multilinear Algebra	Semester 1	12.5
Subject	Study Period Commencement:	Credit Points:								
MAST30005 Algebra	Semester 1	12.5								
MAST90025 Commutative and Multilinear Algebra	Semester 1	12.5								
Corequisites:	None									
Recommended Background Knowledge:	None									
Non Allowed Subjects:	None									
Core Participation Requirements:	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>									
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Subject Overview:	This course is an introduction to algebraic geometry. Algebraic geometry is the study of zero sets of polynomials. It exploits the interplay between rings of functions and the underlying geometric objects on which they are defined. It is a fundamental tool in many areas of mathematics, including number theory, physics and differential geometry. The syllabus includes affine and projective varieties, coordinate ring of functions, the Nullstellensatz, Zariski topology, regular morphisms, dimension, smoothness and singularities, sheaves, schemes.									
Learning Outcomes:	<p>After completing this subject, students should gain:</p> <ul style="list-style-type: none"> # an understanding of the concepts of affine and projective varieties; # an understanding of schemes; # the ability to calculate invariants of varieties; # the ability to solve problems involving varieties by converting them into problems in algebra; # the ability to pursue further studies in this and related areas. 									
Assessment:	Up to 60 pages of 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:	None
Recommended Texts:	Robin Hartshorne, Algebraic Geometry, Graduate Texts in Mathematics Volume 52 (1977). Igor R. Shafarevich, Basic Algebraic Geometry 1: Varieties in Projective Space, Springer-Verlag (1994). David Eisenbud and Joe Harris, The geometry of Schemes, Springer (2000).
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:	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include: <ul style="list-style-type: none"> # problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; # analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis; # collaborative skills: 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)