MAST90054 Differential Topology

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours: 2 x one-hour lectures per week and 1 x one-hour practical class per week. Total Time Commitment: 120 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	It is recommended that students have completed a sound subject in real and complex analysis (equivalent to 620-221 [2008] Real and Complex analysis) and have been exposed to multivariable calculus.
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
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Subject Overview:	This course brings together analysis and topology. It will discuss intersections of submanifolds transversality Sard's theorem deformations and the inverse function theorem. The course will then discuss the deep and fundamental concepts underlying intersection theory in particular homology cohomology and differential forms. Characteristic classes will also be discussed.
Objectives:	After completing this subject, students will gain: • an appreciation for the importance of analysis when treating manifolds; • a fundamental understanding of transversality; • a useful view of algebraic topology; • an ability to apply these ideas to concrete problems; • some references to infinite-dimensional generalisations • the ability to pursue further studies in this and related areas.
Assessment:	Up to 50 pages of written assignments (45%: three assignments worth 15% each, due early, mid and late in semester), a 3 hour written examination (55%, in the examination period).
Prescribed Texts:	TBA
Recommended Texts:	TBA
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:	At completion of this subject students should gain: # Problem-solving skills (especially through exercises and assignments) including engaging with unfamiliar problems and identifying relevant strategies; # Analytical skills including the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of the analysis.

Related Course(s):	Master of Science (Mathematics and Statistics)