MAST90030 Advanced Discrete Mathematics

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. On-campus
Time Commitment:	Contact Hours: 36 hours comprising 3 one-hour lectures per week. Total Time Commitment: Three contact hours per week and seven hours private study.
Prerequisites:	None.
Corequisites:	None.
Recommended Background Knowledge:	It is recommended that students have completed third year subjects in graph theory and/or discrete mathematics (equivalent to 620-352 Graph Theory or 620-353 Discrete Mathematics).
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:	Prof Peter Forrester
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Subject Overview:	The subject consists of four main topics. These are combinatorial logic by way of Sperner's lemma and Ramsey theory; combinatorics on words and Sturmian sequences; bijective enumeration with applications to maps, permutations, lattice paths, trees, integer partitions, symmetric functions and tableaux. This subject has relevance to a broad range of specialisations.
Objectives:	After completing the subject students will gain: - an advanced knowledge of advanced discrete mathematics topics drawn from: Ramsey theory, graph theory, posets and lattices, Sturmian sequences, enumeration, integer partitions, extremal set theory, combinatorial designs, and finite geometries. - the ability to pursue further studies in this and related areas.
Assessment:	Up to 50 pages of written assignments (48%: four assignments worth 12% each, due during the semester), a 3 hour written examination (52%, in the examination period).
Prescribed Texts:	None
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:	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: * 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)