MAST30012 Discrete Mathematics

Credit Points:	12.50		
Level:	3 (Undergraduate)		
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. Lectures and practice classes.		
Time Commitment:	Contact Hours: 3 x one hour lectures per week, 1 x one hour practice class per week Total Time Commitment: Estimated total time commitment of 120 hours		
Prerequisites:	One of		
	Subject	Study Period Commencement:	Credit Points:
	MAST20026 Real Analysis with Applications	Semester 1, Semester 2	12.50
	MAST10009 Accelerated Mathematics 2	Semester 2	12.50
	and any other second year level subject from the Department	nt of Mathematics and S	tatistics
Corequisites:	None		
Recommended Background Knowledge:	None		
Non Allowed Subjects:	None		
Core Participation Requirements:	For the purposes of considering request 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 of 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 Richard Brak		
Contact:	Third Year Coordinator Email: <u>tycoord@ms.unimelb.edu.au</u> (mailto:tycoord@ms.unimelb.edu.au)		
Subject Overview:	This subject is concerned with the study of objects, which are finite in number and typically computable. At a computational level one seeks efficient algorithms and formulas for the listing, construction and counting of the objects.		
	The main topics to be covered are: enumeration and listings; permutations; designs, codes and finite geometry; words, patterns and Ramsey theory; and physical combinatorics. Designs are relevant to statistics, codes to communication engineering, patterns and Ramsey theory to computer science, and physical combinatorics to mathematical physics. Words are useful for representing and constructing objects and relating combinatorial objects to algebraic structures.		codes s. Designs y theory to useful for e structures.
Objectives:	On completion of this subject, the student should:		
	# comprehend the features characterizing problems in discrete combinatorial mathema		hematics;
	 # develop skills required to analyze and solve problems ir mathematics; # appreciate the overlap between discrete mathematics a mathematics. 	n discrete combinatorial	d and pure

Assessment:	Three written assignments due at regular intervals during semester amounting to a total of up to 50 pages (20%), and a 3-hour written examination in the examination period (80%).	
Prescribed Texts:	None	
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2011/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2011/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2011/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2011/B-MUS) You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/ breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.	
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. 	
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course.	
Related Course(s):	Bachelor of Science	
Related Majors/Minors/ Specialisations:	Applied Mathematics (specialisation of Mathematics and Statistics major) Operations Research / Discrete Mathematics (specialisation of Mathematics and Statistics major) Pure Mathematics (specialisation of Mathematics and Statistics major) Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses	