620-647 Enumerative Combinatorics

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus. On-campus.
Time Commitment:	Contact Hours: 36 hours comprising 3 one-hour lectures per week. Total Time Commitment: 3 contact hours and 7 hours private study per week.
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 or 620-252 [2008] Analysis). Use of mathematical symbolic computation packages such as Mathematica and Maple is encouraged.
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:	Prof Aleks Owczarek
Subject Overview:	The subject is about the use of generating functions for enumeration of combinatorial structures, including partitions of numbers, partitions of sets, permutations with restricted cycle structure, connected graphs, and other types of graph. The subject covers the solution of recurrence relations, methods of asymptotic enumeration, and some applications in statistical mechanics. The methods covered have widespread applicability, including in areas of pure and applied mathematics and computer science.
Objectives:	After completing this subject, students should - have learned about the use of generating functions for enumeration of combinatorial structures, including partitions of numbers and of sets, permutations with restricted cycle structure, connected graphs and other types of graph; - have studied the solution of recurrence relations; methods of asymptotic enumeration; - have considered some applications in statistical mechanics; - gain the ability to pursue further studies in this and related areas.
Assessment:	Up to 50 pages of written assignments (40%: two assignments worth 20% each, due mid and late in semester), a 3 hour written examination (60%, in the examination period).
Prescribed Texts:	Generatingfunctionology, by H. S. Wilf
Recommended Texts:	None
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 - 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