620-624 Stochastic Processes

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus. On-campus.
Time Commitment:	Contact Hours: 36 hours comprising 2 one-hour lectures per week and 1 one-hour practice class 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 undergraduate subject in probability (equivalent to 620-201 [2008] Probability or 620-205 [2008] Probability for Statistics) and a third year subject in stochastic modeling (equivalent to 620-301 [2008] Stochastic Modelling).
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 Konstantin Borovkov
Subject Overview:	The subject discusses the key aspects of the theory of stochastic processes that plays the central role in modern probability and has numerous applications in natural sciences and in industry. Main concepts include finite dimensional distributions, path properties and convergence of stochastic processes, conditional expectations and martingales, submartingales and related inequalities, random walks, the strong law of large numbers and the functional central theorem, processes with independent increments and Markov processes. Applications to modelling random phenomena evolving in time are discussed throughout the course.
Objectives:	After completing this subject students should - gain an understanding of the basic concepts of the theory of stochastic processes; - gain an understanding of the fundamental techniques used in the study of random processes; - extend their ability to construct mathematical models for real-life situations involving uncertainty and evolving in time; - gain the ability to pursue further studies in this and related areas.
Assessment:	Up to 40 pages of written assignments (20%: two assignments worth 10% each, due mid and late in semester), a 3 hour written examination (80%, 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:	Upon completion of this subject, students should develop: - Problem-solving skills (especially through tutorial 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; - Ability to work in a team, through interactions with other students.

Related Majors/Minors/ Specialisations:	R05 RM Master of Science - Mathematics and Statistics