620-201 Probability

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 36 lectures (three per week), 11 one-hour tutorials (one per week) and 11 one-hour computer laboratory classes (one per week) Total Time Commitment: 120 hours
Prerequisites:	One of [07]620-120 (UMEP Maths for High Achieving Students), [07]620-121, [07]620-140, [07]620-141 and one of [07]620-131, [07]620-113, [07]620-123, [08]620-143 (grade of H2B or above), [05]620-193 (grade of H2B or above).
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of 620-201, 620-205, 620-370, 431-325.
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 active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	A/Prof K Borovkov
Subject Overview:	This subject offers a thorough grounding in the fundamental concepts and tools of mathematical probability, probability modelling and simulation. Basic concepts covered include random experiments and sample spaces, probability axioms and theorems, discrete and continuous random variables/distributions (including measures of location, spread and shape), expectations, and generating functions. The probability distributions and models discussed in the course arise frequently in real world applications. These include a number of widely used one-dimensional distributions and fundamental probability models such as Poisson processes and Markov chains. Two dimensional (bivariate) distributions are also introduced (particularly the Bivariate Normal), leading naturally to an examination of notions of independence and dependence (covariance and correlation). Methods for deriving the distribution of various transformations of random variables are also explored. Techniques to obtain the exact and approximate distributions of sums of random variables will be introduced. These methods will be illustrated through some well known normal approximations to discrete distributions and by obtaining the exact and approximate distributions of some commonly used statistics. In computer labs students will learn to use software for both standard probability calculations and simulations of more complex probability models.
Assessment:	Up to 50 pages of written assignments due during semester (20%); a 3-hour written examination in the examination period (80%).
Prescribed Texts:	None
Breadth Options:	This subject is a level 2 or level 3 subject and is not available to new generation degree students as a breadth option in 2008. This subject or an equivalent will be available as breadth in the future. Breadth subjects are currently being developed and these existing subject details can be used as guide to the type of options that might be available. 2009 subjects to be offered as breadth will be finalised before re-enrolment for 2009 starts in early October.

Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	This subject is available for science credit to students enrolled in the BSc (pre-2008 degree only), BASc or a combined BSc course. Students undertaking Actuarial Studies should take 620-201 instead of 620-205.
Related Course(s):	Bachelor of Arts