

620-370 Statistics for Mechanical Engineers

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus. Lectures and practice classes.
Time Commitment:	Contact Hours: 36 one-hour lectures (three per week) , 11 one-hour practice classes (one per week) Total Time Commitment: 120 hours total time commitment.
Prerequisites:	One of # 620-113 (prior to 2008) # 620-123 (prior to 2008) # 620-143 (prior to 2009) # 620-193 (prior to 2006)
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	It is not possible to gain credit for <i>Statistics for Mechanical Engineers</i> and any of the following subjects: <i>Data Analysis 2</i> , <i>Probability</i> , <i>Statistics</i> , <i>Probability for Statistics</i> , 620-270 (prior to 2009), <i>Applied Statistics for Optometrists</i> .
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:	Assoc Prof Ray Watson
Subject Overview:	This subject introduces the fundamental concepts of probability and statistical inference. Students should develop the ability to use simple probability models in applications to standard situations and to carry out standard statistical analyses. This subject shows the breadth of application of statistics and the important role statistics has in quality improvement, and covers the following topics: basic probability theory; simple probability models (including Bernoulli trials, Poisson processes, sampling models); random variables and descriptions of their probability distributions; simple distribution theory, including binomial, Poisson and normal distributions; mean and variance: the importance of variance in quality management, engineering practice and decision-making under uncertainty; quality checking: acceptance sampling; exploratory data analysis; random sampling and properties of random samples; introduction to statistical inference: estimation, confidence intervals and hypothesis testing in standard situations based in the binomial, Poisson and normal distributions; quality management: control charts; analysis of variance; linear regression and prediction; multiple regression and polynomial regression; and quality improvement: the principles of experimental design and the analysis of some simple designed experiments, including factorial designs and Taguchi methods.
Objectives:	.
Assessment:	Up to 50 pages of written weekly homework during the semester (20%); 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/2009/D09)

	<p># <u>Bachelor of Commerce</u> (https://handbook.unimelb.edu.au/view/2009/F04)</p> <p># <u>Bachelor of Environments</u> (https://handbook.unimelb.edu.au/view/2009/A04)</p> <p># <u>Bachelor of Music</u> (https://handbook.unimelb.edu.au/view/2009/M05)</p> <p>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.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	<p>Students in the combined degree BE/BSc and students wishing to have access to all third year level statistics subjects are advised to enrol in both <i>Probability</i> and <i>Statistics</i> instead of <i>Statistics for Mechanical Engineers</i>.</p> <p>This subject is only available to engineering students. Combined science/engineering students should speak to an engineering course adviser before enrolling in this subject as it may be recommended that they complete mathematics and statistics subjects which earn science credit instead.</p> <p>This subject is not available for science credit points.</p>
Related Course(s):	<p>Bachelor of Engineering (Biomedical) Biomechanics Bachelor of Engineering (Mechanical & Manufacturing) and Bachelor of Arts Bachelor of Engineering (Mechanical and Manufacturing Engineering) Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Engineering (Mechanical & Manufacturing) and Bachelor of Laws</p>