505-965 Bayesian Statistical Methods

Credit Points:	12.500
Level:	Graduate/Postgraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus. Distance
Time Commitment:	Total Time Commitment: 8-12 hours total study time per week
Prerequisites:	505-105 Mathematics Background for Biostatistics 505-106 Epidemiology 505-107 Principles of Statistical Inference 505-940 Linear Models 505-941 Categorical Data and GLMs 505-975 Probability and Distribution Theory
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 Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	MEGA Centre
Subject Overview:	Topics include: simple one-parameter models with conjugate prior distributions; standard models containing two or more parameters, including specifics for the normal location-scale model; the role of non-informative prior distributions; the relationship between Bayesian methods and standard ‘classical’ approaches to statistics, especially those based on likelihood methods; computational techniques for use in Bayesian analysis, especially the use of simulation from posterior distributions, with emphasis on the WinBUGS package as a practical tool; application of Bayesian methods for fitting hierarchical models to complex data structures. **Subject Objectives:** To achieve an understanding of the logic of Bayesian statistical inference, i.e. the use of probability models to quantify uncertainty in statistical conclusions, and acquire skills to perform practical Bayesian analysis relating to health research problems.
Assessment:	Two written assignments to be submitted during semester worth 30% each (approx 10 hrs work each). Four practical exercises to be submitted during semester worth 10% each (approx 6 hrs work each).
Prescribed Texts:	Gelman, A, Carlin, JB, Stern, HS, and Rubin, DB, Bayesian Data Analysis, 2nd edition, Chapman and Hall, 2003. ISBN 158488388X Special Computer Requirements: Subject coordinator will advise (no licensing costs involved) Resources Provided to Students: Printed course notes, including published literature, and assignment material by mail and email, and online interaction facilities.
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:	Independent problem solving, facility with abstract reasoning, clarity of written expression, sound communication of technical concepts **Level:** 500
Links to further information:	http://www.sph.unimelb.edu.au
Notes:	This subject is not available in the Master of Public Health. **Subject Coordinator:** Dr Lyle Gurrin, 8344 0731
Related Course(s):	Master of Biostatistics Postgraduate Certificate in Biostatistics Postgraduate Diploma in Biostatistics