

POPH90139 Bayesian Statistical Methods

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught online/distance.
Time Commitment:	Contact Hours: None Total Time Commitment: 170 hours
Prerequisites:	# POPH90014 Epidemiology 1 OR POPH90016 Epidemiology # POPH90148 Probability and Distribution Theory # MAST90100 Inference Methods in Biostatistics OR POPH90017 Principles of Statistical Inference # MAST90102 Linear Regression OR POPH90120 Linear Models # MAST 90099 Categorical Data: Models and Methods OR POPH90121 Categorical Data & GLMs
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 Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website.
Coordinator:	Assoc Prof Lyle Gurrin
Contact:	l.gurrin@unimelb.edu.au (mailto:%20l.gurrin@unimelb.edu.au) Melbourne School of Population and Global Health OR Currently enrolled students: # General information: https://ask.unimelb.edu.au (https://ask.unimelb.edu.au) # Email: enquiries-STEM@unimelb.edu.au (mailto:enquiries-STEM@unimelb.edu.au) Future Students: # Further Information: http://mispgh.unimelb.edu.au/ (http://mispgh.unimelb.edu.au/) # Email: Online Form (http://mispgh.unimelb.edu.au/study/degrees/master-of-public-health/overview)
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.

Learning Outcomes:	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
Links to further information:	http://www.sph.unimelb.edu.au
Notes:	This subject is not available in the Master of Public Health.
Related Course(s):	Graduate Certificate in Biostatistics Graduate Diploma in Biostatistics Master of Biostatistics Postgraduate Diploma in Biostatistics