

POP90139 Bayesian Statistical Methods

Credit Points:	12.50																					
Level:	9 (Graduate/Postgraduate)																					
Dates & Locations:	This subject is not offered in 2014. Distance																					
Time Commitment:	Contact Hours: None Total Time Commitment: 8-12 hours total study time per week																					
Prerequisites:	- <table border="1" data-bbox="387 459 1485 891"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>POP90016 Epidemiology</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POP90015 Mathematics Background for Biostatistics</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POP90017 Principles of Statistical Inference</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POP90148 Probability and Distribution Theory</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POP90121 Categorical Data & GLMs</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>POP90120 Linear Models</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	POP90016 Epidemiology	Semester 1, Semester 2	12.50	POP90015 Mathematics Background for Biostatistics	Semester 1, Semester 2	12.50	POP90017 Principles of Statistical Inference	Semester 1, Semester 2	12.50	POP90148 Probability and Distribution Theory	Semester 1, Semester 2	12.50	POP90121 Categorical Data & GLMs	Semester 2	12.50	POP90120 Linear Models	Semester 2	12.50
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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.																					
Contact:	<p>lgurrin@unimelb.edu.au (mailto:lgurrin@unimelb.edu.au)</p> <p>OR</p> <p>Academic Programs Office Melbourne School of Population and Global Health Tel: +61 3 8344 9339 Fax: +61 3 8344 0824 Email: sph-gradinfo@unimelb.edu.au (mailto:sph-gradinfo@unimelb.edu.au)</p> <p>OR</p> <p>Biostatistics Collaboration of Australia Email: bca@ctc.usyd.edu.au (mailto:bca@ctc.usyd.edu.au) Website: www.bca.edu.au (http://www.bca.edu.au)</p>																					
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):	Master of Biostatistics Postgraduate Certificate in Biostatistics Postgraduate Diploma in Biostatistics