

## POPH90120 Linear Models

| <b>Credit Points:</b>                              | 12.5   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
|--|--|----------------|----------------------------|----------------|------------------------|------------------------|-------|--|------------------------|-------|---|------------------------|-------|---|------------------------|-------|
| <b>Level:</b>                                      | 9 (Graduate/Postgraduate)  |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Dates &amp; Locations:</b>                      | 2015, Parkville<br>This subject commences in the following study period/s:<br>Semester 1, Parkville - Taught online/distance.<br>Semester 2, Parkville - Taught online/distance.   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Time Commitment:</b>                            | Contact Hours: None Total Time Commitment: 170 hours   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Prerequisites:</b>                              | -<br><table border="1" data-bbox="387 584 1485 904"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>POPH90016 Epidemiology</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POPH90015 Mathematics Background for Biostatistics</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POPH90017 Principles of Statistical Inference</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>POPH90148 Probability and Distribution Theory</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table>  | Subject        | Study Period Commencement: | Credit Points: | POPH90016 Epidemiology | Semester 1, Semester 2 | 12.50 | POPH90015 Mathematics Background for Biostatistics | Semester 1, Semester 2 | 12.50 | POPH90017 Principles of Statistical Inference | Semester 1, Semester 2 | 12.50 | POPH90148 Probability and Distribution Theory | Semester 1, Semester 2 | 12.50 |
| Subject  | Study Period Commencement:   | Credit Points: |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| POPH90016 Epidemiology                             | Semester 1, Semester 2   | 12.50          |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| POPH90015 Mathematics Background for Biostatistics | Semester 1, Semester 2   | 12.50          |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| POPH90017 Principles of Statistical Inference      | Semester 1, Semester 2   | 12.50          |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| POPH90148 Probability and Distribution Theory      | Semester 1, Semester 2   | 12.50          |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Corequisites:</b>                               | None   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Recommended Background Knowledge:</b>           | None   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Non Allowed Subjects:</b>                       | None   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Core Participation Requirements:</b>            | 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.   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Coordinator:</b>                                | Assoc Prof Julie Simpson   |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Contact:</b>                                    | <b><a href="mailto:julieas@unimelb.edu.au">julieas@unimelb.edu.au</a> (mailto:julieas@unimelb.edu.au)</b> (Semester 1)<br><b><a href="mailto:john.carlin@unimelb.edu.au">john.carlin@unimelb.edu.au</a> (mailto:john.carlin@unimelb.edu.au)</b> (Semester 2)<br><b>OR</b><br>Academic Programs Office<br>Melbourne School of Population and Global Health<br>Tel: +61 3 8344 9339<br>Fax: +61 3 8344 0824<br>Email: <b><a href="mailto:sph-gradinfo@unimelb.edu.au">sph-gradinfo@unimelb.edu.au</a> (mailto:sph-gradinfo@unimelb.edu.au)</b><br><b>OR</b><br>Biostatistics Collaboration of Australia<br>Email: <b><a href="mailto:bca@ctc.usyd.edu.au">bca@ctc.usyd.edu.au</a> (mailto:bca@ctc.usyd.edu.au)</b><br>Website: <b><a href="http://www.bca.edu.au">www.bca.edu.au</a> (http://www.bca.edu.au)</b> |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |
| <b>Subject Overview:</b>                           | The method of least squares; regression models and related statistical inference; flexible nonparametric regression; analysis of covariance to adjust for confounding; multiple regression with matrix algebra; model construction and interpretation (use of dummy variables, parameterisation, interaction and transformations); model checking and diagnostics; regression  |                |                            |                |                        |                        |       |  |                        |       |   |                        |       |   |                        |       |

|                                      |   |
|--------------------------------------|---|
|                                      | to the mean; handling of baseline values; the analysis of variance; variance components and random effects.   |
| <b>Learning Outcomes:</b>            | To enable students to apply methods based on linear models to biostatistical data analysis, with proper attention to underlying assumptions and a major emphasis on the practical interpretation and communication of results.      |
| <b>Assessment:</b>                   | 2 x written assignments (requiring approx 10 hours of work each) due in week 7 & 8 (30% each)<br>4 x practical exercises (approximately 3 hours of work each) including brief online quizzes due throughout the semester (10% each) |
| <b>Prescribed Texts:</b>             | Resources Provided to Students: Printed course notes and assignments by mail, email, and online interaction. Special Computer Requirements: Stata statistical software  |
| <b>Recommended Texts:</b>            | Kutner MH, Nachtsheim CJ, Neter J, Li W. <i>Applied Linear Statistical Models</i> . 5th edition. McGraw-Hill/Irwin 2005. ISBN 978-0-07-310874-2   |
| <b>Breadth Options:</b>              | This subject is not available as a breadth subject.   |
| <b>Fees Information:</b>             | Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>   |
| <b>Generic Skills:</b>               | Independent problem solving, facility with abstract reasoning, clarity of written expression, sound communication of technical concepts   |
| <b>Links to further information:</b> | <a href="http://www.sph.unimelb.edu.au">http://www.sph.unimelb.edu.au</a>   |
| <b>Notes:</b>                        | This subject is not available in the Master of Public Health.   |
| <b>Related Course(s):</b>            | Master of Biostatistics<br>Postgraduate Certificate in Biostatistics<br>Postgraduate Diploma in Biostatistics   |