

# POPH90145 Survival Analysis & Regression for Rates

| <b>Credit Points:</b>                       | 12.50  |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
|---|--|----------------|--|---------|----------------------------|----------------|--|------------------|-------|---------|----------------------------|----------------|---|------------------|-------|---|------------------|-------|---------|----------------------------|----------------|-------------------------|------------------|-------|------------------------|------------------|-------|
| <b>Level:</b>                               | 9 (Graduate/Postgraduate)  |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Dates &amp; Locations:</b>               | 2013, Parkville<br>This subject commences in the following study period/s:<br>September, Parkville - Taught on campus.<br>Classroom  |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Time Commitment:</b>                     | Contact Hours: 30 hours Total Time Commitment: 120 hours   |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Prerequisites:</b>                       | <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>POPH90144 Linear &amp; Logistic Regression</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>This subject can be taken concurrently</p> <p><b>AND Either</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>POPH90142 Epidemiology &amp; Analytic Methods 1</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>POPH90143 Epidemiology &amp; Analytic Methods 2</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p><b>OR</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>POPH90013 Biostatistics</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>POPH90014 Epidemiology</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> |                |  | Subject | Study Period Commencement: | Credit Points: | POPH90144 Linear & Logistic Regression | Not offered 2013 | 12.50 | Subject | Study Period Commencement: | Credit Points: | POPH90142 Epidemiology & Analytic Methods 1 | Not offered 2013 | 12.50 | POPH90143 Epidemiology & Analytic Methods 2 | Not offered 2013 | 12.50 | Subject | Study Period Commencement: | Credit Points: | POPH90013 Biostatistics | Not offered 2013 | 12.50 | POPH90014 Epidemiology | Not offered 2013 | 12.50 |
| Subject                                     | Study Period Commencement:   | Credit Points: |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| POPH90144 Linear & Logistic Regression      | Not offered 2013   | 12.50          |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| Subject                                     | Study Period Commencement:   | Credit Points: |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| POPH90142 Epidemiology & Analytic Methods 1 | Not offered 2013   | 12.50          |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| POPH90143 Epidemiology & Analytic Methods 2 | Not offered 2013   | 12.50          |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| Subject                                     | Study Period Commencement:   | Credit Points: |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| POPH90013 Biostatistics                     | Not offered 2013   | 12.50          |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| POPH90014 Epidemiology                      | Not offered 2013   | 12.50          |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Corequisites:</b>                        | None   |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Recommended Background Knowledge:</b>    | Special computer skills required: Students are expected to have experience using the Stata statistical package for multivariable regression models (i.e. single outcome but multiple exposure variable).   |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <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>                         | Dr Elizabeth Williamson  |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |
| <b>Contact:</b>                             | Centre for Molecular, Environmental, Genetic and Analytic (MEGA) Epidemiology<br>Melbourne School of Population Health<br>Tel: +61 3 8344 9340<br>Email: ewi@unimelb.edu.au<br>OR<br>Academic Programs Office  |                |  |         |                            |                |  |                  |       |         |                            |                |   |                  |       |   |                  |       |         |                            |                |                         |                  |       |                        |                  |       |

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|                                      | Melbourne School of Population Health<br>Tel: +61 3 8344 9339<br>Fax: +61 3 8344 0824<br>Email: <a href="mailto:sph-gradinfo@unimelb.edu.au">sph-gradinfo@unimelb.edu.au</a>  |
| <b>Subject Overview:</b>             | This subject presents methods for the analysis of data where outcome events occur over time, particularly in the context of a cohort study or more general longitudinal designs. It starts with the estimation of constant rates and two-group comparison of rates using the rate ratio, and progresses to the use of life tables and the Kaplan-Meier procedures to estimate a survival curve when rates are not assumed to be constant over time and (possibly right-censored) time-to-event data are available. Much of the subject is devoted to studying Poisson and proportional hazards (Cox) regression methods that allow adjustment for confounding variables when comparing rates between two or more primary exposure groups. Emphasis is on practical application and interpretation of results in the context of standard epidemiological study designs and particularly longitudinal studies. Practical work estimating rates and fitting models to data will use the statistical package Stata. |
| <b>Objectives:</b>                   | On completion of this subject, students are expected to be able to: <ul style="list-style-type: none"> <li># Calculate a rate using time-to-event data and compare rates between groups (and draw appropriate inferences)</li> <li># Implement the life table and Kaplan-Meier procedures for estimating survival curves both manually and with the use of a computer.</li> <li># Describe the role of regression modelling of rates in epidemiology, particularly in the context of cohort and other longitudinal studies</li> <li># Demonstrate practical skills in fitting and interpreting regression models for events over time (Poisson and Cox regression models) in the statistical computing package Stata</li> <li># Recognise that the proportional hazards (Cox) regression model is a special case of both Poisson regression (for rates) and conditional logistic regression (for matched case-control sets).</li> </ul>   |
| <b>Assessment:</b>                   | A written assignment (involving calculations and diagrams) of not more than 8 pages due at the start of the 4th week of the delivery period (30%), a written assignment of not more than 10 pages due about one week after the intensive delivery period (40%) and a 1.5-hour open-book examination (administered by the School) to be held during the examination period at the end of semester 2 (30%).   |
| <b>Prescribed Texts:</b>             | BR Kirkwood and JAC Sterne, Essential Medical Statistics Second Edition, Blackwell Science, 2003.   |
| <b>Recommended Texts:</b>            |   |
| <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>               | At the completion of this subject, students will have developed skills in: <ul style="list-style-type: none"> <li># Critical thinking and analysis</li> <li># Finding, evaluating and using relevant information</li> <li># Problem-solving</li> <li># Written communication</li> <li># Using computers</li> </ul>  |
| <b>Links to further information:</b> | <a href="http://www.sph.unimelb.edu.au">http://www.sph.unimelb.edu.au</a>   |
| <b>Notes:</b>                        |   |
| <b>Related Course(s):</b>            | Master of Epidemiology<br>Master of Public Health<br>Master of Science (Epidemiology)   |

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| <b>Related Majors/Minors/<br/>Specialisations:</b> | Epidemiology and Biostatistics<br>Public Health |
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