

## **PopMed 6520 - Introduction to Epidemiological and Statistical Methods Course outline, Fall 2011**

### **Co-coordinator:**

Jan Sargeant  
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### **Co-instructors:**

Cate Dewey

### **Guest lectures:**

Peggy Pritchard (library services)  
Judy Wanner (library services)  
Sandra Auld (ethics)  
Zvonimir Poljak

### **TA:**

Rob Koziarski ([rkoziars@uoguelph.ca](mailto:rkoziars@uoguelph.ca))

### **Class schedule:**

Tuesdays and Thursdays, 1:30 – 3 pm.

**Description:** This is a 0.5 credit introductory graduate course for MPH students and students interested in epidemiology. The course will provide an introduction to research design, literature searches, grant proposal writing, and critical appraisal, as well as survey (questionnaire) design and basic statistical methods for epidemiological studies.

### **Objectives:**

Students who complete this course should be able to:

- Formulate a research question
- Conduct a structured literature search for literature relevant to a specific research topic
- Structure a grant proposal to conduct an epidemiological study
- Plan, draft, and analyze a survey instrument to identify potential disease determinants
- Conduct basic statistical analyses of epidemiological data

### **Course approach:**

This course will consist of two 80 minutes sessions per week, either in a classroom setting or in the OVC computer laboratory. Prior to class, a number of readings will be assigned to prepare for the lecture discussion. Students are expected to have read these readings prior to class and to be prepared to discuss them. Classroom time will be devoted to discussion of the main components of the readings, although students will be responsible for all materials described in the readings. Computer laboratory

sessions will provide an opportunity for students to apply the skills they have learned in the lectures and in the readings.

**Pre-requisites:**

There are no pre-requisites for this course. POPM\*6200 (Epidemiology I) is a co-requisite class. Students not taking Epidemiology I concurrently and who have not previously taken Epidemiology I will require permission of the course coordinator. Students seeking permission to take this course without the Epidemiology I course require at least one graduate-level course in epidemiology.

**Evaluation and Grading:**

|                   |     |
|-------------------|-----|
| Assignments       | 35  |
| Final assignment  | 35  |
| Final examination | 30  |
| Total points      | 100 |

**Assignments:** There will be 7 assignments; each worth 5 marks out of 100. Assignments are due prior to the start of the class session on the due date. Assignments 1-4 should be submitted to Dr. Sargeant at [sargeanj@uoguelph.ca](mailto:sargeanj@uoguelph.ca). Statistics assignments should be submitted to the instructor of the associated class session. Late assignments will be penalized by 1 mark (out of 5) if received after the start of the class session and by 1 mark (out of 5) for each late day thereafter. Assignment due dates are as follows:

|  |              |
|--|--------------|
| Assignment 1: Critical appraisal of research grant | Due Sept. 22 |
| Assignment 2: Proposed research question           | Due Sept. 29 |
| Assignment 3: Ethical approval process             | Due Oct. 13  |
| Assignment 4: Survey framework                     | Due Oct. 20  |
| Assignment 5: Statistics 1                         | Due Nov. 3   |
| Assignment 6: Statistics 2                         | Due Nov. 15  |
| Assignment 7: Statistics 3                         | Due Nov. 24  |

**Final assignment:**

Due December 1 by 5 pm. Details are posted on the courselink sight.

**Final Exam:**

Dec. 9 2011 from 1 – 4 pm. The final exam will cover primarily the statistics component of the course. The exam will take place in the OVC computer lab, and student will be allowed to use either StatistiX or SPSS to complete the exam.

Information regarding all assignments will be posted on the website. The website can only be accessed by persons who are registered for the class, therefore it is imperative that students ensure that they are registered for the class and have access. If you have any problems accessing Courselink, contact CCS at x58888 or [58888help@uoguelph.ca](mailto:58888help@uoguelph.ca).

## Course topics:

| Session    | Date   | Instructor | Topic   | Room              |
|------------|--------|------------|---|-------------------|
| 1          | Sep-08 | Sargeant   | Introduction, risk factors at different organizational levels | 1715 LLC          |
| 2          | Sep-13 | Sargeant   | Research hypotheses and study design overview                 | 1715 LLC          |
| 3          | Sep-15 | Sargeant   | Proposal writing  | 1715 LLC          |
| 4          | Sep-20 | Sargeant   | Proposal writing  | 1715 LLC          |
| 5          | Sep-22 | Pritchard  | Searching the literature                                      | 2500 computer lab |
| 6          | Sep-27 | Pritchard  | Reference management  | 2500 computer lab |
| 7          | Sep-29 | Sargeant   | Questionnaire design  | 1715 LLC          |
| 8          | Oct-04 | Sargeant   | Questionnaire design  | 1715 LLC          |
| 9          | Oct-06 | Sargeant   | Questionnaire design  | 1715 LLC          |
| 10         | Oct-11 | Sargeant   | Questionnaire design  | <b>1713 LLC</b>   |
| 11         | Oct-13 | Auld       | Ethical approval  | 1715 LLC          |
| 12         | Oct-18 | Sargeant   | Population measures of disease frequency                      | 1715 LLC          |
| 13         | Oct-20 | Dewey      | Stats - variability and descriptive statistics                | 2500 computer lab |
| 14         | Oct-25 | Dewey      | Stats lab I   | 2500 computer lab |
| 15         | Oct-27 | Dewey      | Stats - continuous - t-tests, ANOVA                           | 2500 computer lab |
| 16         | Nov-01 | Dewey      | Stat lab II   | 2500 computer lab |
| 17         | Nov-03 | Dewey      | Stats - categorical - chi-square tests                        | 2500 computer lab |
| 18         | Nov-08 | Dewey      | Stat Lab III  | 2500 computer lab |
| 19         | Nov-10 | Sargeant   | Stats - non-parametric  | 2500 computer lab |
| 20         | Nov-15 | Sargeant   | Stats lab IV  | 2500 computer lab |
| 21         | Nov-17 | Sargeant   | Regression  | 2500 computer lab |
| 22         | Nov-22 | Sargeant   | Stats lab 5   | 2500 computer lab |
| 23         | Nov-24 | Sargeant   | Statistics - review   | 2500 computer lab |
| 24         | Nov-29 | Poljak     | Data management   | 2500 computer lab |
| Final exam | Dec-09 |            |   | 2500 computer lab |

**Pre-class preparation:** To enhance learning during classroom sessions, pre-class readings (or other preparation) have been assigned. Textbooks for chapter readings are available on 2-hour reserve from the library. Where possible (based on copyright permissions), links to required readings have been provided. Journal articles are also available with a central login from the University of Guelph library unless otherwise specified.

You are expected to complete the readings for each class prior to the class. The lectures will not necessarily cover all of the material in the lectures that you will be responsible for in assignments, and you will get much more out of the lectures having completed the pre-class readings.

**Textbooks:**

The following textbooks are recommended or required for the course. Students can access the list of reserve books as well as links to online reserves via Ares and Courselink. Ares can be accessed at: <https://ares.lib.uoguelph.ca/ares/> ). Please note that only reserve items are located at the OVC Learning Commons; all other publications are now housed at the Main Library.

These texts are recommended for the survey designed and proposal component of the course:

Rea, LM and Parker, RA. Designing and conducting survey research: A comprehensive guide. 3<sup>rd</sup> Edition. Jossey-Bass, a Wiley Imprint. 2005.

Hulley SB, Cummings SR, Browner WS, Grady D, Newman TB. Designing Clinical Research, 3<sup>rd</sup> edition. Lippincott Williams & Wilkins, 2007.

Dillman DA. Mail and internet surveys: The tailored design method 2007 update with new internet, visual, and mixed model guide. John Wiley and Sons, Inc. 2007.

For the statistics component of the course, the following are useful general textbooks. However there are many other introductory textbooks that may also be of use!

Norman, G. and Streiner, D. (2008) Biostatistics: The Bare Essentials, 3<sup>rd</sup> Edition. People's Medical Publishing House, ISBN: 978-1-55009-347-6

Petrie, A. and Watson, P. (2006) Statistics for Veterinary and Animal Science, 2nd Edition. Wiley- Blackwell, ISBN: 978-1-4051-2781-3

Campbell, M.J., Machin, D. and Walters, S. (2007) Medical Statistics: A Textbook for the Health Sciences, 4th Edition. Wiley- Blackwell, ISBN: 978-0-470-02519-2

**Software:**

The program Statistix will be used for the statistics portion of the class. There also will be available information on using the software SPSS. Both programs are installed on the computers in the PopMed computer room. You may use either program to complete assignments and the final examination. If you wish to purchase Statistix (PC only), please contact Sally Maclachlin.

**Additional course materials** may be found on the class Courselink website

**Students with Special Needs/Learning Disabilities:** If you have a documented disability and require accommodations to obtain equal access to this course, please meet with Dr. Sargeant at the beginning of the semester, or as soon as possible thereafter.

If you suspect you may have a learning disability, you are strongly encouraged to consult the Centre for Students with Disabilities (<http://www.slcs.uoguelph.ca/csd/docforLD.cfm>)

**Academic Misconduct:** The university has a policy on academic misconduct that ***will be supported AND enforced by all instructors in this course:***

[http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec\\_d0e1340.shtml](http://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e1340.shtml)

Academic misconduct takes many forms and includes, but is not limited to: copying, plagiarism, submitting a product prepared in whole or by another person, buying or selling academic work, submitting the same piece of work twice for academic credit. Also note that aiding/abetting academic misconduct is itself academic misconduct.

**It is the responsibility of each student to read and understand the policy.** All students, particularly those on their first course of study at the University of Guelph, are **strongly encouraged** to consult the University's Academic Integrity tutorial, a short but highly useful online tutorial to help inform and clear common misconceptions regarding academic misconduct: <http://www.academicintegrity.uoguelph.ca/>

If you need further clarification, make an appointment with someone in the Learning Commons.