

**Department of Population Medicine**  
**POPM\*6290: Statistics for the health Sciences**  
**Fall 2011**

**Start: September 12 – End: December 1**

**Coordinator:** Olaf Berke

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Office hours: after class or by appointment.

**Lecture:** Monday 13:30 – 15:00, OVC 1715

Wednesday 13:30 – 15:00, OVC 1715

**Except:** Wednesday Nov. 16 OVC 1713

Wednesday Nov. 23 PAHL 1812

Thursday Dec 1 ????

**Calendar description**

This 0.5 credit course provides an overview of advanced methods for the analysis of clustered/correlated epidemiological data. Special emphasis is on spatial, time series, longitudinal and survival data.

**Prerequisite(s):** [POPM\\*6210](#) (or equivalent graduate course from another university)

The general theme in this course is *modeling of clustered epidemiologic data*. Clustering means that observations are dependent. This dependence is a result of natural grouping of individuals such as: animals in herds, people in families. Clustering can also occur because observations are taken repeatedly over time on the same individuals or repeatedly over space. As a result statistical methods for independent data are no longer applicable and specialized methods for clustered data are needed.

This course is an *applied course*. All methods will be discussed and applied to real data using statistical software. The software used in this course is “R”. R was specifically developed for teaching and research, and is the only single software package I am aware of, that allows fitting of all models discussed in this course. R is freeware and available for all platforms (Windows, UNIX and MacOS) from the Internet at: <http://probability.ca/cran/>.

**Course objectives**

Students will learn to use advanced statistical methods for the analysis of spatial and temporal data in epidemiological research. Students will develop skills in the application of statistical software to answer typical questions with spatial and temporal epidemiological data.

**Course evaluations**

2-hour midterm exam (25%)

3-hour final exam (45%)

Term project (30%)

**Midterm Exam**

This 2-hour exam will consist of multiple choice and short answer questions, as well as computational exercises to demonstrate understanding of the theory and methods covered in class. Room: Computer Lab (Room 2500, Stewart Building).

**Final Exam**

This 2-hour exam will consist of multiple choice and short answer questions, as well as computational exercises to demonstrate understanding of the theory and methods covered in class. Room: Computer Lab (Room 2500, Stewart Building).

**Term Project**

A take-home project covering a specific topic as discussed in class assigned to be done independently.

**Academic accommodations:**

Students who require academic accommodation due to a disability must first contact the Centre for Students with Disabilities (CSD). The CSD will assist the students in making appropriate arrangements with the course coordinator. More information at:

<http://www.uoguelph.ca/csd/>

**Digital recordings:**

Electronic recording of classes is expressly forbidden without prior consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

**Academic Integrity and Misconduct:**

Make yourself familiar with the notions of and penalties for offences against Academic Integrity as well as Academic Plagiarism. These are detailed in the UoG Graduate Calendar and at

<http://www.academicintegrity.uoguelph.ca/>

**You will have to sign  
that you have read and understand these terms  
as explained on the University of Guelph website!**

**Course topics and references**

The software used in this course allows point-and-click execution of standard statistics (similar to many other software packages), however advanced statistical modeling will require you to write your own commands. You get detailed handouts about the examples discussed in class, but you may also want to read a structured introduction to the use of R. The following text is online available from the library:

- Dalgaard P (2008) *Introductory Statistics with R*, 2<sup>nd</sup> edn. Springer, New York.

### Class and room schedule

Date	Room / Note	Topic (tentative)
Mo Sept 12	OVC 1715	Time Series Analysis 1
Wed Sept 14	OVC 1715	Time Series Analysis 2
Mo Sept 19	OVC 1715	Time Series Analysis 3
Wed Sept 21	OVC 1715	Time Series Analysis 4
Mo Sept 26	OVC 1715	Time Series Analysis 5
Wed Sept 28	OVC 1715	Time Series Analysis 6
Mo Oct 3	OVC 1715	Longitudinal Analysis 1
Wed Oct 5	OVC 1715	Longitudinal Analysis 2
Mo Oct 10	Holiday: no class => Dec 1	
Wed Oct 12	OVC 1715	Longitudinal Analysis 3
Mo Oct 17	OVC 1715	Longitudinal Analysis 4
Wed Oct 19	GeoMed2011: no class	
Mo Oct 24	Computer Lab OVC2500	Midterm 1:30-
Wed Oct 26	OVC 1715	Spatial Analysis 1
Mo Oct 31	OVC 1715	Spatial Analysis 2
Wed Nov 2	OVC 1715	Spatial Analysis 3
Mo Nov 7	OVC 1715	Spatial Analysis 4
Wed Nov 9	OVC 1715	Spatial Analysis 5
Mo Nov 14	OVC 1715	Spatial Analysis 6
Wed Nov 16	OVC 1713	Spatial Analysis 7
Mo Nov 21	OVC 1715	Spatial Analysis 8
Wed Nov 23	PAHL 1812	Survival Analysis 1
Mo Nov 28	OVC 1715	Survival Analysis 2
Wed Nov 30	OVC 1715	Survival Analysis 3
Thu Dec 1	Classes rescheduled from Oct 10, Classes conclude Room??	Survival Analysis 4 & Wrap-up
Mo Dec 5	Examinations commence	
???	Computer Lab OVC2500	Final exam 3 hours: 13:00-
Fri Dec 16	Examinations conclude	
Wed Dec 21	Grade reports due	