

GEOG 3210 B Quantitative Analysis in Geography Course Outline: Section Winter 2018

1. Course Information

1.1. Classroom Location and Time:

Lectures:

SSC 3006

Tuesday 16:30 – 18:30

Labs:

SSC 1316A

Thursday 14:30 – 16:30

1.2. Contact Information:

Instructor: Jed Long

Office: TBA

Office Hours: Thursday 13:00 – 14:00

Email: jlong83@uwo.ca

TA: Hwang Lee

Office: SSC 2434

Office Hours: TBA

Email: hlee738@uwo.ca

2. Calendar Description

2.1. Course Description

Simple parametric and nonparametric statistical methods through multiple regression are introduced. Exploratory data analysis techniques are examined as a supplement to more traditional statistical methods. Geography specific techniques are also presented.

2 lecture hours, 2 lab hours, 0.5 course

Antirequisite(s): All other senior level statistics courses numbered 2000 or above.

Prerequisite(s): Geography 2210A/B or Biology 2244A/B or Statistical Sciences 2244A/B and enrolment in a geography program or permission from the instructor.

Prerequisite checking is the student's responsibility.

2.2. Senate Regulations

Senate Regulations state, "unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be

deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.”

3. Textbook

Rogerson, P. A. (2015) *Statistical Methods for Geography: A Student's Guide*. SAGE Publications. Fourth Edition. pp 396. Paperback ISBN: 978-1446295731.

Textbook Website:

<https://study.sagepub.com/rogerson4e/student-resources/inferential-statistics>

All other material will be posted on the OWL course website.

4. Course Objectives and Format

Course Objectives:

- I. To develop a working knowledge of statistical concepts as applied to geographical data.
- II. To become competent in data visualization and exploratory (spatial) data analysis.
- III. To understand issues with performing classical statistical analysis on geographical data.
- IV. To learn new technical skills, specifically the statistical software R, along with RStudio.

Although mathematical detail is not emphasized, competence in simple mathematical notation and arithmetic are fundamental. All computations will be performed using statistical software. The primary piece of software we will be using is R and RStudio.

Course Format:

Lectures: 2 hrs (lecture and applied demonstration; bring laptop if you can, not mandatory)

Labs: 2 hrs (in computer lab, demonstration and supported work time).

Attendance at lecture and lab classes are imperative to success in this course. The course material is cumulative. You should review lectures and readings weekly (do not expect success if you only study and practice before exams!). It is the student’s responsibility to cover any material missed by failure to attend lectures, please also see all material on the course website.

Lectures (Tuesdays; 16:30 – 18:30)

	Lecture Date	Topic	Reading Material (Ch. in text)
1	08/01/2019	Course Outline, Introduction to R & RStudio	Online Tutorial
2	15/01/2019	Describing Data	Ch. 1, Ch. 2 (Sec. 2.1 – 2.5)
3	22/01/2019	Visualizing Data	Ch 3
4	29/01/2019	Probability and Statistics	Ch. 4, Ch. 5
5	05/02/2019	Mid-Term Test	---
6	12/02/2019	Statistical Tests	Ch. 6
7	19/02/2019	Reading Week - No Class	---
8	26/02/2019	Correlation and linear regression	Ch. 7
9	05/03/2019	Logistic regression	Ch. 8, Ch. 9 (Sec. 9.6)
10	12/03/2019	Advanced linear models	Ch. 9 (Sec. 9.1 – 9.5)

11	19/03/2019	Identifying patterns in (geographic) data	Ch 12
12	26/03/2019	Exploratory Spatial Analysis	Ch. 2 (Sec. 2.6)
13	02/04/2019	Mapping and GIS in R	No Reading
14	09/04/2019	Help / Review	No Reading

Labs (Thursdays; 14:30 – 16:30)

	Lab Date	Topic
1	10/01/2019	No Lab
2	17/01/2019	Describing Data
3	24/01/2019	Visualizing Data
4	31/01/2019	Probability Models
5	07/02/2019	Statistical Tests
6	14/02/2019	Assignment 1 Help
7	21/02/2019	Reading Week - No Lab
8	28/02/2019	Linear Regression
9	07/03/2019	Logistic regression
10	14/03/2019	Assignment 2 Help
11	21/03/2019	Cluster Analysis
12	28/03/2019	Mapping geographic data in R
13	04/04/2019	Assignment 3 Help
14	11/04/2019	End of Term – No Lab

5. Learning Outcomes

- Analyse quantitative geographical and statistical data
- Make informative graphical visuals using various data types
- Perform statistical tests to compare between different groups
- Fit regression models (linear and non-linear) using multiple covariates
- Perform exploratory (spatial) data analysis, such as cluster analysis
- Code statistical tests in R using the RStudio environment
- Interpret statistical results from the work of others

6. Evaluation

Evaluation Components	Weight (%)	Assignment Schedule
1. Test 1	10%	Tuesday, February 5, 2019
2. Assignment 1	30%	Friday, February 15, 2019
3. Assignment 2	30%	Friday, March 15, 2019
4. Assignment 3	30%	Friday, April 12, 2019

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text.

For Western's Policy on Accommodation for Medical Illness and a downloadable SMC please refer to the [Academic Handbook](#). Late assignments will be face deductions at the rate of 10% per day late.

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department. For more information please see the [Policy on Accommodation for Illness](#).

Grades will not be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.

7. Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams must be provided the Academic Counselling Office and Instructor within 48 hours of the scheduled exam. For missed exams, you must take your documentation to Academic Counselling within 48 hours of the exam. Otherwise, the instructor will assign a grade of zero. The format and content of make-ups may differ substantially from the scheduled test or examination.

8. Use of Electronic Devices

No electronic devices will be allowed during tests and examinations. However, a 1 page (letter – both sides) sheet with notes will be permitted during tests and exams.

9. Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a [Scholastic Offence](#).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

10. Western's Commitment to Accessibility

The Department of Geography strives at all times to provide accessibility to all faculty, staff, students and visitors in a way that respects the dignity and independence of people with disabilities.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2147 for any specific question regarding an accommodation. [Information regarding accommodation of exams](#) is available on the Registrar's website.

More information about "[Accessibility at Western](#)" is available.

11. Medical Issues

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. The Student Services website provides greater detail about the University's policy on [medical accommodation](#). This site provides links the necessary forms. In the event of illness, you should contact Academic Counselling as soon as possible. The Academic Counsellors will determine, in consultation with the student, whether or not accommodation should be requested. They will subsequently contact the instructors in the relevant courses about the accommodation. Once the instructor has made a decision about whether to grant an accommodation, the student should contact his/her instructors to determine a new due date for tests, assignments, and exams.

Students must see the [Academic Counsellor](#) and submit all required documentation in order to be approved for certain accommodation.

12. Mental Health

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit Western's [Health and Wellness website](#) for more information on mental health resources.

13. Support Services

[Student Support Services](#)

[Student Development Services](#)

14. Important Dates

January 7: Classes resume

January 15: Last day to add a second term half course

February 18: Family Day – Department Office Closed

February 18 to 22: Spring Reading Week (No classes; Department Office open)

March 7: Last day to drop a second term half course without penalty

April 9: Classes end

April 10: Study day

April 11-30: Examination Period