

GEOG 9113: Geographical Data & Analysis Fall Semester 2024

1. Course Information

1.1. Classroom Location and Time:
Wednesday, 13:30–15:30, SSC 1316

Contact Information:

Instructor: Jed Long
<https://Geospatial.uwo.ca>
Email: jed.long@uwo.ca

2. Calendar Description

2.1. Course Description

This course will expose students to modern techniques for processing and analyzing geospatial data using computational and statistical methods. We will explore ideas related to big data, machine learning, data mining, and data science. Students will develop skills in computer programming, data handling, statistics, and geographical data analysis.

2 hours / week, 0.5 course

Antirequisite(s): None

Prerequisite(s): **GEOG 3210** or equivalent experience with GIS and statistical software.

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

Readings will be selected from relevant articles and online sources.

4. Course Objectives and Format

Course Objectives:

- I. Learn core concepts associated with computational geography
- II. Develop foundational statistical analysis skills
- III. Introduce common spatial analysis procedures
- IV. Discover new / cutting edge methods in our fields

This course will rely heavily on the development of technical skills. The course will be taught using the R statistical software environment, although students may choose to use other software as well (e.g., ArcGIS, PCI, Python, or Matlab). Students should have relevant experience working with geographical data in GIS or related software environments and a basic understanding of statistical methods.

Course Format:

Course Timetable

Wk	Date	Topic
1	Sep 11	NO CLASS (Jed Away)
2	Sep 18	Geographers Should Learn to Code
3	Sep 25	NO CLASS (Jed Fieldwork)
4	Oct 2	Data Processing and Formatting
5	Oct 9	Data Visualization
	Oct 16	READING WEEK NO LECTURE
6	Oct 23	NO CLASS (Jed Fieldwork)
7	Oct 30	Statistical Foundations
8	Nov 6	Generalized Linear Models (GLM)
9	Nov 13	Generalized Linear Mixed Models (GLMM)
10	Nov 20	Spatial & Geographically Weighted Regression
11	Nov 27	Final Project Presentations 1
12	Dec 4	Final Project Presentations 2

Please see the reading list posted on OWL.

5. Learning Outcomes

- Understand core concepts in statistical and geospatial analysis
- Develop geospatial data handling techniques
- Learn how to build analysis workflows
- Conduct reproducible research
- Become adept at different software packages

6. Evaluation

Evaluation Components	Weight (%)	Assessment Due Date
1. Labs	10%	Weekly
2. Special Topics Presentation	20%	November 1, 2024
3. Final Project Presentation	20%	Last Two Weeks of Class
4. Final Project Paper	50%	December?

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. 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.

8. Accommodation Policy

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The accommodation policy can be found here: [Academic Accommodation for Students with Disabilities](#).

Academic Consideration for Student Absence

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the term, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For Western University policy on Consideration for Student Absence, see

[Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs](#)

and for the Student Medical Certificate (SMC), see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the [Western Multicultural Calendar](#).

9. Use of Electronic Devices

This course relies heavily on the use of computer software and systems.

10. Academic Offences

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[Include this paragraph on plagiarism-checking software only if relevant. If not relevant delete the paragraph below]

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

11. 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.

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

Western's Support Services

Student Development Centre