
GEOG*2460: Analysis in Geography
Department of Geography, Environment and Geomatics
University of Guelph

Semester: Fall 2025

Section: 01

Credits: 0.5

Course Prerequisite(s): 0.50 credits at the 1000 or 2000 level in Geography

Instructor and Contact Info

Instructor: Lucia Costanzo

Email: lcostanz@uoguelph.ca

Office Location and Hours: TBA

GTAs:

- Kayla Wicks (kwicks01@uoguelph.ca)
- Kathleen Reid (kreid17@uoguelph.ca)

Course Description

Undergraduate Calendar Description:

"This course exposes students to quantitative methods used in the study and interpretation of geographic phenomena. Course material and assessments build experience in statistical techniques and their use in research."

Land Acknowledgement

The University of Guelph (and our classroom) are located on the traditional lands of the Attawandaron people, and the treaty lands of the Mississaugas of the Credit. I also acknowledge the presence of other First Nations, Métis, and Inuit neighbours on this land. As a scholar in and of this place, I believe it is important for us to learn about and respect the relationship of Indigenous peoples to this land.

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Course Objectives

By the end of this course, students will be able to:

- Describe fundamental concepts of statistical analysis, including sampling, probability, and data types, in the context of geographic data.
- Summarize geographic datasets using descriptive statistics, tables, and graphs to communicate patterns effectively.
- Apply estimation techniques, including confidence intervals and hypothesis tests, in geographic contexts.
- Select and apply appropriate statistical tests (ANOVA, chi-squared, regression, logistic regression) to evaluate relationships between variables.
- Interpret statistical results in geographic contexts, recognizing assumptions and limitations of different methods.
- Use R to organize, analyze, and visualize geographic data with statistical techniques covered in the course.
- Evaluate geographic research critically, considering statistical design, analysis, and the validity of conclusions.

Delivery Method

This course will be delivered in person.

- Lectures will take place face-to-face each week during the scheduled class time. Lecture content will include explanations of statistical methods, demonstrations using geographic datasets, and guided problem-solving activities.
- Lecture slides and supplemental materials will be posted on the course Courselink site, but slides may not contain all material discussed in class. Students are expected to attend lectures regularly, take thorough notes, and participate in class discussions and activities.
- Lab sessions will also be held in person. Each lab will begin with a short introduction by a Graduate Teaching Assistant (GTA), who will provide guidance, clarify instructions, and answer questions. Labs are designed to reinforce lecture content and provide hands-on experience using R and RStudio for statistical analysis.
- Students are expected to attend and actively participate in both lectures and labs, complete weekly lab assignments, and stay up to date with course announcements on Courselink.

If you experience illness or other challenges that prevent attendance, it is your responsibility to contact the instructor or your GTA in advance, and to catch up on any missed material.

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Lecture Schedule

Class Meetings: Tuesdays 7:00 PM – 9:50 PM

Class Location: LA 204

Please note:

- Classes run from on Tuesdays from September 9 to Tuesday, November 25, 2025.
- There will be no class on October 14 due to Fall Study Break Day.
- To make up for the missed class, and additional class will be held on Thursday, November 27, 2025.

Weekly Schedule of Topics, Tests, and Labs

Week	Date	Lecture Topic	Lab Topic	Lab Due
1	2025-09-09	Statistical Analysis and Sampling	Lab 0 Intro to R/RStudio	
2	2025-09-16	Descriptive Statistics	Lab 1 Descriptive Statistics	
3	2025-09-23	Probability	Lab 2 Descriptive Statistics	Lab 1
4	2025-09-30	Confidence Intervals	Lab 3 Probability distributions	Lab 2
5	2025-10-07	Test 1 (In-class)	No Labs	
6	2025-10-14	No Class (Fall Study Break)		
7	2025-10-21	Hypothesis Testing	Lab 4: Confidence Intervals	Lab 3
8	2025-10-28	ANOVA	Lab 5: Hypothesis tests	Lab 4
9	2025-11-04	Chi Square Tests	Lab 6: ANOVA	Lab 5
10	2025-11-11	Test 2 (In-class)	No Labs	
11	2025-11-18	Regression	Lab 7: Chi-square tests	Lab 6
12	2025-11-25 (Thurs)	Regression	Lab 8: Regression	Lab 7
13	2025-11-27 (Thurs)	Logistic Regression	No Labs	Lab 8
Final Exam	2025-12-04			

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Assessment and Evaluation

Assessment Breakdown

Labs: 30%

Test 1: 15%

Test 2: 25%

Final Exam: 30%

Course Passing Requirement

To pass the course, students must achieve a minimum average of 50% on the combined scores of the following:

- Test 1
- Test 2
- Final Exam

This average is calculated from only these components; performance in labs does not offset a failing average in tests/exam.

Lab Assignment Policy

Due Date

Lab assignments are due at the beginning of the lab session one week after the lab is assigned, unless otherwise stated in the “Weekly Schedule of Topics, Tests and Labs” table in this outline. For example, if Lab 1 is assigned during the lab session in Week 2, then it is due at the beginning of the lab in Week 3.

Late Penalty

Late submissions will incur a 10% deduction per day, including weekends. Assignments more than 5 days late will receive a grade of zero unless an extension is granted in advance.

Extensions

If you require an extension due to illness, emergency, or other legitimate reasons, you must contact your GTA before the due date to discuss alternate arrangements.

Labs and Exams

Lab content reinforces the material covered in lectures and may appear on tests and the final exam. Therefore, students are strongly encouraged to complete all lab exercises, even those not formally graded.

Tests and Final Exam

There will be two in-class term tests and one final exam in this course:

- Test 1: Tuesday, October 7 (in-class).

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- Test 2: Tuesday, November 11 (in-class).
- Final Exam: Thursday, December 4.
(Time and location will be posted on WebAdvisor)

All tests and the final exam are:

- Closed book.
- Held in person.
- Cumulative, covering material from the entire course. However, each assessment will emphasize content not previously tested.
- May include content from lab sessions; students are therefore strongly encouraged to complete and review all lab work, even if it is not graded

Tests and exams may include:

- Questions based on lecture content.
- Application of lab concepts.
- Interpretation of statistical outputs and scenarios.

No lecture will be held during test weeks. Please review the Weekly Schedule for details.

Final Exam

Date: Thursday, December 4th, 2025

Time: 11:30 AM – 1:30 PM

Location: TBA

(Please check WebAdvisor closer to the date for your assigned exam location)

Important Exam Regulations

Students are responsible for understanding the university's rules and expectations regarding final examinations. Please review the following resources:

Examinations – Student Responsibilities: [Undergraduate Calendar – Examinations Sections](#)

Academic Considerations, Appeals, and Petitions: If you are unable to meet the final exam requirements due to medical, psychological, or compassionate circumstances, consult: [Academic Considerations, Appeals & Petitions](#)

Last Day to Drop Course

The final day to drop Fall 2025 courses without academic penalty is: Friday, November 28, 2025. After this date:

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- A final grade will be recorded for the course, regardless of whether coursework is complete.
- A zero will be assigned for any missed tests or assignments.
- This grade will appear on your transcript and will be factored into your cumulative average.

Students are strongly encouraged to consult with their Program Counsellor or Academic Advisor before making any decisions about dropping courses.

Cost of Textbooks and Learning Resources

This course does not require the purchase of any textbooks or paid learning materials.

Required Materials

- Lecture notes will be posted to the course Courselink site in advance of each topic.
- These notes are written to accompany the lectures but do not cover all material discussed in class. Students are expected to supplement these with their own notes during lectures.

Example problems are included in the lecture notes. Many will be covered in class; others are left as optional exercises to help students prepare for tests and the final exam.

Optional Materials

- For students wishing to delve deeper into any topics, nearly any introductory statistics textbook with an emphasis on applications will be suitable. One recommended example is: Burt, Barber & Rigby (2009). "Elementary Statistics for Geographers (3rd Ed.)", Guilford Press.
- This book is optional and not required for success in the course. Students are encouraged to use second-hand or digital copies if desired.

Calculators

- Tests and the final exam will include questions that require computations. Students must bring a scientific calculator for in-person assessments. Cell phones, laptops, and software calculators will not be allowed during tests or exams.

Software

- Labs will use free, open-source software, already installed on lab computers. Instructions will be provided for students who wish to install the software on their personal devices.

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Standard Statements for Undergraduate Courses

Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/>) is outlined in the Undergraduate Calendar.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to make a booking at least 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (<https://www.uoguelph.ca/sas/>)

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Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/>).

Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all undergraduate students except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in the Undergraduate Calendar – Dropping Courses (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/>).

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (<https://wellness.uoguelph.ca/>). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (<https://wellness.uoguelph.ca/navigators/>) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (<https://wellness.uoguelph.ca/shine-this-year/>). The Student Wellness team are here to help and welcome the opportunity to connect with you.

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Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Recording of Materials

Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars (<http://www.uoguelph.ca/registrar/calendars/?index>) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration