GEOG*2460 Analysis in Geography
DEPARTMENT OF GEOGRAPHY, ENVIRONMENT AND GEOMATICS
COURSE OUTLINE- Fall 2022

1. Instructor

Ben DeVries, bdv@uoguelph.ca

2. Office Hours

Wednesdays, 10am-11am, HUTT-131

3. Graduate Teaching Assistants

To be confirmed.

4. Prerequisite

0.50 credits at the 1000 level in Geography

5. Course Description

This course will introduce analytical techniques commonly used in geography and other natural and social sciences. It will emphasize the use of quantitative information in geography, including data collection and analysis. Analytical procedures will include graphical presentation of data, descriptive statistics, application of probability and sampling theory, inferential statistics and spatial statistics. The course will focus on when and why these tools should be applied, how analytical procedures are conducted and the interpretation of the results. Computers and data analysis software will be used.

6. Learning Objectives

- To learn how to use quantitative tools for the description and analysis of geographic data;
- To develop and strengthen intuition about statistical methods;
- To develop critical analytical skills for the evaluation of geographic research; and
- To learn how to undertake statistical analyses using the R programming language.

7. Course Organization and Presentation

Lectures for GEOG*2460 are planned to be held in a face-to-face setting. All students are expected to take their own notes during lectures. Incomplete lecture notes (described below) will be provided to students guide with note-taking.

Labs will be held in a face-to-face setting. Typical lab sessions begin with a short introduction by the graduate teaching assistant (GTA), including explanations of key concepts and announcements regarding due dates, etc.

8. Textbook and Other Supplies

There is no required textbook for this course. Lecture notes will be posted to the Courselink site for this course in advance of each topic. The notes are written to accompany the lectures, but do not cover all

the material that will be discussed in lectures. You are expected to supplement these notes with your own notes during lectures. Example problems, many of which are covered during lectures, are included in the lectures notes. Some of these problems will be left as optional exercises to students to help prepare for the midterm and final exams.

The tests and final exams will include questions with a computation component. *Students will need to provide their own scientific calculator for use in exams*. Cell phones or other software calculators (e.g., via laptop) will not be allowed during exams. Labs will make use of free, open-source software, which has already been installed on lab computers. Download and installation instructions will be provided for any students who wish to work through labs on their personal computers.

9. Method of Evaluation

- Labs 30%
- Test 1 15%
- Test 2 25%
- Final Exam 30%

Students must obtain an overall average of at least 50% in the combined tests (2) and final exam to pass the course. Lab assignments are due at the beginning of the lab session one week after the lab has been assigned, except where otherwise indicated under "Lab Schedule and Topics" below. The late penalty for labs is 10% per day, so it is best to get them in on time! If you have a legitimate reason for an extension, you must contact your GTA and make arrangements for a new deadline before your assignment is due. The midterm and final exams may contain one or more questions related to materials covered in labs.

10. Lectures Schedule and Topics

A tentative schedule of lecture topics is provided in the table below:

Week	Starts on	Tentative topic
1	2022-09-05	Introduction to the course
2	2022-09-12	Statistical analysis and sampling
3	2022-09-19	Descriptive statistics
4	2022-09-26	Probability
5	2022-10-03	Confidence Intervals; **Test 1**
6	2022-10-10	**Fall Break;** Confidence Intervals
7	2022-10-17	Hypothesis Tests
8	2022-10-24	Hypothesis Tests; ANOVA
9	2022-10-31	ANOVA; **Test 2**
10	2022-11-07	Chi-squared Tests
11	2022-11-14	Spatial Data; Linear Regression
12	2022-11-21	Linear Regression
13	2022-11-28	Logistic Regression

11. Lab Schedule and Topics

Lab assignments will cover material discussed in lectures. In some cases, additional concepts may be introduced to build upon topics discussed in lectures. All assignments will be done using R and RStudio, which is free software specially designed to carry out statistical analysis. Assignments are due at the beginning of lab sessions the week after they are assigned. Material covered in labs may also be included in the term tests and final exam.

The following table outlines a *tentative* schedule of lab topics and due dates:

Week	Starts on	Tentative topic	To be handed in
1	2022-09-05	NO LABS	
2	2022-09-12	NO LABS	
3	2022-09-19	Lab 0: Introduction to R	
4	2022-09-26	Lab 1: Descriptive Statistics	
5	2022-10-03	Lab 2: Probability	Lab 1
6	2022-10-10	NO LABS	Lab 2
7	2022-10-17	Lab 3: Confidence Intervals	
8	2022-10-24	Lab 4: Hypothesis Tests	Lab 3
9	2022-10-31	NO LABS	Lab 4
10	2022-11-07	Lab 5: ANOVA	
11	2022-11-14	Lab 6: Chi-squared tests	Lab 5
12	2022-11-21	Lab 7: Linear Regression	Lab 6
13	2022-11-28	NO LABS	Lab 7

12. Tests and Exams

There will be two term tests and one final exam in this course. The first term test (Test 1) will be held on **Thursday, October** 6th. Test 1 will be held as an *open-book,* online exam, conducted via Courselink. You will have 90 minutes to complete the test online, but will be given some flexibility as to when you may start the exam on the day of the test. Specific times will be announced closer to the exam. There is no lecture scheduled for that day. The second term test (Test 2) will be held on **Thursday, November 3rd**. Test 2 will be a *closed-book, in person* exam to be held during the regularly scheduled lecture period. The Final Exam is scheduled for **Monday, December 5th at 8:30am**. It will also be a closed-book exam, and the location will be announced later in the semester.

All term tests and final exam will be cumulative (they will cover content from the entire course). They are designed this way because of the cumulative nature of the material covered in this course. However, you can expect the content of the second term test and the final exam to emphasize material not already covered on a test. Since the labs follow lecture material closely, term tests and final exams may include some questions related to the labs.

13. Territorial Acknowledgements

We acknowledge that the University of Guelph resides on the ancestral lands of the Attawandaron people and more recently, the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer our respect to our Anishinaabe, Haudenosaunee and Métis neighbours as we strive to strengthen our relationships with them.

Today, this gathering place is home to many First Nations, Métis and Inuit peoples and acknowledging them reminds us of our important connection to this land where we learn and work.

14. 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).

15. COVID-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

16. Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email. This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

17. E-mail Communication

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

18. When You Cannot Meet a Course Requirement

Late assignments will be assessed a penalty of 10% per day (not including weekends). After the assignment has been handed back to the class no grade can be assigned on late work.

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.

19. Drop Date

The last date to drop one-semester courses, without academic penalty, is **Friday, December 2nd**. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar.

20. 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.

21. Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website.

22. Academic Misconduct

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. An example of academic misconduct that might occur in this course is a student copying an answer or using a map/image from another student. Students must create their own digital files for computer-based exercises. 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 is detailed in the Undergraduate Calendar.

23. Recording of Materials

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

24. Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.