Western SocialScience

Geography and Environment

GEOG 2210B – Intro to Stats for Geographers
Course Outline: Section 001 Winter 2024

This course is taught in-person

1. Course Information

If you wish to contact us by email, please put **GEOG2210B in the subject line of the email and refer to section 7 on communication.

Classes Start	Spring Reading Week	Classes End	Study day(s)	Exam Period
January 8	February 19-23	April 8	April 9 & 10	April 11-30

January 16, 2024: Last day to add a second-term half course
February 19, 2024: Family Day
March 7, 2024: Last day to drop a second term half course without academic penalty

Course Instructor	Contact Information	Office Hours
Geneviève Metson	gmetson@uwo.ca	Wednesday 2:30-3:30pm or by appointment

Teaching Assistant(s)	Contact Information	Office Hours
Ethan Cade	ecade@uwo.ca	Thursdays 1:30-2:30
Hailyee Ha	hha24@uwo.ca	Thursdays 1:30-2:30

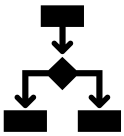
- Student drop-in hours will be held in person during office hours (see above), however group or one-on-one Zoom meetings may be arranged when there are mitigating circumstances– email the instructor or TA.

2. Calendar Description

An introduction to the nature of geographical analysis of data and the application of statistical techniques and computing systems to in Geography: data collection, research design, sampling; models of spatial data, probability, distributions, hypothesis testing, correlations and regression.

2 lecture hours, 2 laboratory hours, 0.5 course

Antirequisites: Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Health Sciences 3801A/B, MOS 2242A/B, the former Psychology 2810, the former Psychology 2820E, Psychology 2811A/B, Psychology 2830A/B, Psychology 2850A/B, Psychology 2851A/B, Social Work 2207A/B, Sociology 2205A/B, Statistical Sciences 2035, Statistical Sciences 2141A/B, Statistical Sciences 2143A/B, Statistical Sciences 2244A/B, Statistical Sciences 2858A/B, Statistical Sciences 2037A/B if taken prior to Fall 2010.



Prerequisites: 1.0 course from Geography 1100, Geography 1200A/B, Geography 1300A/B, Geography 1400F/G, Geography 1500F/G, Geography 2131A/B, Geography 2132A/B, Geography 2133A/B, Geography 2152F/G, Geography 2153A/B, Geography 2160A/B, Environmental Science 1021F/G; or enrolment in the Major in Physical Geography and Environment, in the Certificate in Geographic Information Science, or in an Honours Earth Science Program for Professional Registration.

Prerequisite checking is the student's responsibility

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

Required textbook:

Lembo Jr., A. J., McGrew Jr., J. C.(2023). An introduction to statistical problem solving in geography. Waveland Press: Illinois 4th Edition ISBN 978-1-4786-4946-5. Available at the bookstore.

The 3rd and 2nd editions of this textbook would be acceptable and may be at the library:

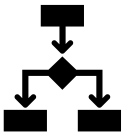
McGrew Jr., J.C., Lembo, A., and Monroe, C. (2014). An introduction to statistical problem solving in geography. Waveland Press: Illinois. 3rd Edition. ISBN: 9781478611196

McGrew Jr. , J.C. and Monroe, C. (2000). An introduction to statistical problem solving in geography. McGraw Hill: Boston. 2rd Edition. ISBN: 0697229718

Additional readings and materials will be placed on OWL (Course Readings)

4. Course Objectives and Format

The field of Geography is marked by diversity in subject matter, which includes physical (environmental), human (socio-economic), and integrated (human-physical) topics of inquiry. It is therefore not surprising to learn that there exists a variety of analytical methods which geographers employ. This course serves as an introduction to these analytical approaches, taking you from the collection and presentation of geographic data to analysis and interpretation. The course is targeted for undergraduate students in geography and related disciplines with limited backgrounds in statistical approaches to geographic problem solving. Analytical examples and problem solving will involve the use of statistical computer packages. Students will leave this course with knowledge and experience in statistics and an appreciation for how they are applied to geographic issues.



Attendance is not required, but it is strongly encouraged.

All course material will be posted to OWL: http://owl.uwo.ca. Any changes will be indicated on the OWL site and discussed with the class.

Google Chrome or Mozilla Firefox are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click here. [Using the right browser is important, especially when using different features integrated with OWL]

If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Learning Outcomes

Upon successful completion of this course, students will be able to:

- Distinguish and compare basic data types and characteristics, concepts, and strategies for data collection (sampling), preparation, communication, and display
- Use tables and graphics to effectively summarize and communicate geographic data using spreadsheet and statistical software packages
- Understand, compare, and be able to apply basic descriptive statistics
- Explain basic concepts in estimation and apply towards confidence interval generation
- Identify and interpret the range of basic statistical tests common in an inferential hypothesis-testing framework
- Explain and apply tests appropriate to evaluate the statistical relationship between variables (both parametric and non-parametric tests, including spatial and non-spatially explicit data)

6. Course Content and Schedule

Week	Dates	Topic	Readings	Lab
1	January 8-12	Course introduction and Geographic Data	Ch 1 & 2	No lab
2	January 15-19	Descriptive statistics (non-spatial and spatial)	Ch 3 & 4	Lab 1: Data basics and software
3	January 22-26	Descriptive statistics (spatial) and Probability	Ch 5 & 6	
4	January 29-February 2	Basic elements of sampling	Ch 7	Lab 2: Descriptive statistics
5	February 5-9	Estimation in sampling	Ch 8	
6	February 12-16	Inferential statistics and Hypothesis testing	Ch 9	Lab 3: Probability and hypothesis testing
	February 19-23	Reading Week	N/A	
7	February 26-March 1	**MIDTERM FEB 26 9:30-11:30 am**	Exam covers Ch 1-9	Lab 3: Probability and hypothesis testing
8	March 4-8	Two sample tests	Ch 10	No lab
9	March 11-15	Three or more sample tests	Ch 11	Lab 4: Difference tests
10	March 18-22	Categorical difference tests and Inferential spatial statistics	Ch 13,14,15	
11	March 25-29	Correlation	Ch 16	Lab 5: Correlation and regression
12	April 1-5	Regression	Ch 17	
13	Monday April 8	Review		No lab

7. Communication

- Students should check the OWL site every 24 – 48 hours for announcements and postings
- All correspondence with the instructor and TAs should be professional and show how the student has used available resources to independently find an answer when correspondence is about class content. At the end of this section an example template to guide your professional email correspondence is provided.

The OWL forum

- This course will use the OWL forum for discussions.
- Students should post ALL course-related content on the OWL forum so that everyone can access answers to questions. Students are welcome and encouraged to help answer questions posed by classmates.
- The discussion forums will be monitored daily (weekdays) by instructors or TA.
- Responses may refer students to a section of the book or syllabus, or part of class notes or lab instructions. This is not to be dismissive of any questions or discourage asking; rather instructors want to encourage using the resources at hand and develop independent research skills.

Emails/messages

- Students should email their instructor(s) and teaching assistant(s) using OWL "messages".
- If the instructor team receives an email about something that should have been posted on the forum they will not respond.
- All communication should go through OWL, but if OWL is unavailable all correspondence the centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts here.
- Messages will be monitored weekdays; students will receive a response in 24 – 48 hours working days.

Student drop-in hours

- Students are encouraged to come ask questions about class material as well as general academic/research questions.
- Introduce yourself when you come in, and tell us what course you are in, and then follow the 3 *explain* steps under the *Example of professional correspondence structure* below
- Instructor drop-in hours will be documented via meeting minutes posted as a discussion forum entry on OWL (i.e. any answers to class content questions will be available to all so thank the students who show up to drop-in hours!)

Example of professional correspondence structure

- The yellow highlight indicates where to fill in specific parts with context and questions.

Subject: *GEO2210B short statement about the nature of the inquiry*

Main body of the message:

Hello Dr. xxx,
I hope this email finds you well.

- *Explain the issue or question*
- *Explain what you have already done to find information or resources or what technique you have tried to resolve the issue.*
- *Explain exactly what you do not understand based on what you have already tried and what kind of assistance or help you are looking for from your TA or instructor.*
-

Thank you for your time.
Kind regards,
Your full name

8. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Midterm exam	In person	35%	February 26 (9:30-11:30 am)
Lab assignments	In person	25% (equal weighting, with the lowest grade dropped)	Varies (see schedule)
Final exam	In person	40%	TBD

The evaluation methods described in the course outline are essential requirements for the course.

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text. **To pass the course, students must achieve a passing grade (>50%) on the exam component (midterm and final) of the course.**

All assignments are due at 11:55 pm EST unless otherwise specified

Exams: The Midterm and Final will assess material covered in lectures, labs, and the textbook. Students are expected to understand and explain statistical concepts, define terms, perform statistical calculations, and interpret statistical software output. The exams will use mixed formats: multiple choice, true/false, fill-in-the-blanks, short answer, definitions, calculations, and diagram questions

Lab assignments: There will be five lab assignments throughout the term. Electronic versions of all assignments will be available via OWL several days prior to the beginning of the laboratory session during which they are assigned. Lab assignments will be due before the start of the next lab via OWL submission. It is the student's responsibility to ensure that

completed assignments are properly uploaded to OWL. Graded exercises will be returned prior to the lab after they are due.

Click here for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Information about late or missed evaluations:

Students seeking academic accommodation on medical grounds for any missed exams 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. If the midterm exam is missed, and the student was granted academic accommodation by their home Faculty, a make-up test will be offered.

Because the lowest of the five lab assignment grades will be dropped, late assessments without illness self-reports will not be accepted.

Late assessments with illness self-reports should be submitted within 24 hours of submission of the last illness self-report. An assessment cannot be submitted after it has been returned to the class; thus if a student with an illness self-report cannot submit their late assignment before feedback is returned to other students, the weight will be transferred to the final grade.

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.

9. Accommodation Policies

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

The University recognizes that a student's ability to meet their academic responsibilities may, on occasion, be impaired by medical illness. Illness may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. The University further recognizes that medical situations are deeply personal and respects the need for privacy and confidentiality in these matters. However, in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student's overall grade in the course

shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet their academic responsibilities.

Policy on Academic Consideration for Medical Illness - Undergraduate Students

Student Medical Certificate (SMC)

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.

10. Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams must be provided to the Academic Counselling Office within 48 hours of the scheduled 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.

11. Use of Electronic Devices

No electronic devices except non-graphing calculators will be allowed during examinations. Phones are not to be used as a calculator during exams.

A calculator with basic functions is required for the laboratory exercises and the examinations. It is each student's responsibility to know how to use their calculator, and to ensure its functionality during examinations.

12. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively.
4. Connect with others. Try forming a study group and try meeting on a weekly basis for study and peer support.
5. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).

13. Continuity of Education Plan (in-person class pivoting to online learning)

In the event of a COVID-19 resurgence during the course that necessitates the university to direct courses move away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

14. 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.

Lab assignments are to be submitted individually. Although students are encouraged to help each other, assignments should be answered individually and identical submissions (among students but also other online material or previous student work) will be considered for plagiarism. Similarly, the use of Generative Artificial Intelligence (e.g. chatGPT[1]) may be considered plagiarism if it is identical or nearly identical to existing work. Although it is not possible for us to ban students from using AI to help explore a problem, if a student cannot explain, argue for, and defend the answers, text, and graphical representations used in a submission, the student will fail.

15. Western's Commitment to Accessibility

The Department of Geography and Environment 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.

16. 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.

[1] Remember there are also security and ethical concerns with using these services. They collect data on what you input. Although we will only use publicly available data in this class, if you input sensitive information, or protected data you have access to, this could put you at risk and/or be a violation of research and academic ethics.

17. Support Services

Western's Support Services
Student Development Centre

Indigenous Student Center

18. Important Dates

Monday January 8: Classes resume
Tuesday January 16: Last day to add a second term half course
Monday February 19: Family Day – Department Office Closed
February 17 to February 25: Spring Reading Week (No classes; Department Office open)
Thursday March 7: Last day to drop a second term half course without academic penalty
Friday March 29: Good Friday – Department Office Closed
Monday April 8: Classes end
April 9 and 10: Study days
April 11-30: Examination Period