The University of Winnipeg
Department of Geography
GEOG 2309 (3)- 001
Statistical Techniques in Environmental Analysis
Lectures Monday, Wednesday, Friday 8:30AM – 9:20AM
Lab Section GEOG-2309L-070 Friday 9:30AM – 10:20AM
Lab Section GEOG-2309L-071 Friday 10:30AM – 11:20AM
Lab Section GEOG-2309L-073 Monday 2:30PM – 3:20PM

Instructor for Lectures and Labs **Julie Robertson**
Email ju.robertson@uwinnipeg.ca
Office hours Via Zoom drop -in: Monday 1:30PM- 2:20PM, Wednesday 9:30AM – 10:20AM
Friday 11:30 AM - 12:00 PM. If you would like to meet on an individual basis, email me and we can set up a Zoom session or phone call.

Please note for all communication you must use your **U of Winnipeg official email**. There will be no communication from emails accounts such as hotmail and gmail which are often tagged as SPAM .
Check your official U Winnipeg email daily.
Read Carefully: You are responsible for reading everything listed in this course outline, PowerPoints, emails, information on Nexus and lecture notes.

Fun Fact: We will learn about causation and correlation. There is a positive correlation between how well you do in statistics and attending lectures and labs. This means as attendance increases there is a greater probability that your understanding of course material will increase!

Course Description
GEOG2309(3) STATISTICAL TECHNIQUES IN ENVIRONMENTAL ANALYSIS (Le3,La1) Statistics describe and summarize data, and make predictions about a population from the information contained in samples. This course provides a working understanding of the elementary statistical techniques and computational procedures for students with little background in mathematics and focuses on the application of these tools to the analyses of geographical and environmental data. Topics include: scales of measurement, univariate statistics, time series analysis, probability, sampling design, hypothesis testing, regression and correlation analysis, and models as quantitative techniques **GEOG 2309L (Lab must be take concurrently)**

Prerequisites: GEOG 1102(3) or GEOG 1103(3), or GEOG 1201(3) or GEOG 1202(3) or permission of the instructor.
Restrictions: Students with standing in the former GEOG 2310(3) may not receive credit for GEOG 2309 (3)
Course Objectives
This course is designed to help you learn statistical skills and the underlying theoretical principals. The broad objective is to learn how to use data to solve problems and answer questions.
Learning outcomes:

- Learn how to analyse data and extract information.
- Learn to analyse patterns in data and develop critical thinking.

- Gain knowledge of the qualitative and quantitative methods that geographers use to understand geographic phenomena.
- You will be able to demonstrate proficiency of basic descriptive, inferential, multivariate, and spatial statistic methods.

Required Textbook

Chapman McGrew Jr, A.J. Lemon & C.B. Moore, 2104. And introduction to statistical problem solving in geography, 3rd edition, Waveland Press Inc. ISBN 13:978-1-4786. ISBN10: 1-4768-1119-7

Due Date	Assignment Description	Marks
October 9	Midterm 1	20%
November 6	Midterm 2	20%
Weekly	Lecture assignments	10%
Variable	5 Labs	25%
December 8	Final assignment	25%

The final date to withdraw from the course without academic penalty is **Tuesday, November 17, 2020. Please note that withdrawing before the VW date does not necessarily result in a fee refund.*

Final grades will be assigned on the basis of accumulated marks allocated throughout the term. Letter grades are typically determined using the following number groupings as guidelines:

A+ = 90 -100%	B+ = 75 - 79.9%	C = 56 – 64.9%
A = 84 – 89.9%	B = 70 – 74.9%	D = 50 – 55.9%
A- = 80 – 83.9%	C+ 65 – 69.9%	F = less than 50%

*Please note that the numeric boundaries separating letter grades may be altered at the request of the Department Review Committee or University Senate.

Online Classroom etiquette

Please log in on time with the links to Zoom that you will be sent prior to class beginning.
Keep your microphone muted unless you are asking a question
If you are late, come into the meeting with your mic muted.
Be respectfully to your colleagues
Participate in the short group lessons during lecture

Nexus

All documents relates to this course (eg. Course syllabus, supplemental readings, required videos) will be made available to students through the Nexus system, You must be registered in the course to have access to these materials. To login to Nexus, go to: http://nexus.uwinnipeg.ca/
If you encounter difficulties with Nexus contact the help desk at 204-786-9149 or help.desk@uwinnipeg.ca

Assignment Information

Lectures:

There will be 10 lecture assignments throughout the semester. I will assign small groups in Zoom. These are short ten minute group activities. One group member must submit online for the group at the end of the lecture period. These are pass/fail assignments and total 10% of the final grade. Any assignments submitted late will not be accepted.

Labs:
There are **5 Lab assignments** that are based on the material covered in lectures and build upon knowledge as the course progresses through the semester.

Due Date	Section GEOG2309L-**073** Monday 2:30PM – 3:20PM	Section GEOG2309L- **070** Friday 9:30AM-10:20AM	Section GEOG2309L-**071** Friday 10:30AM – 11:20AM
Lab 1	Sept. 14, 2020 -4:00PM	Sept 18, 2020 – 11:00AM	Sept. 18, 2020 – 12:00PM
Lab 2	Sept 28, 2020- 4:00PM	Oct 2, 2020- 11:00AM	Oct. 2, 2020- 12:00PM
Lab 3	Oct. 26, 2020 – 4:00PM	Oct 30, 2020 – 11:00AM	Oct.30, 2020 – 12:00PM
Lab 4	Nov. 16, 2020- 4:00PM	Nov. 20, 2020- 11:00AM	Nov. 20, 2020- 12:00PM
Lab 5	Nov. 30, 2020 -4:00PM	Dec. 4, 2020- 11:00AM	Dec. 4, 2020 – 12:00PM

All assignments must be submitted using your name that is associated with the registrar's office, accompanied by your student number, the date, and the correct naming format.
*** Late submissions will NOT be accepted for grading (except in exceptional and documented circumstances) and as a consequence , a grade of " zero" will be recorded.**
All assignments will be graded within two weeks of submission.

Proposed Topics: Subject to change

Week Begins	**Topic**	**Reading**
Sept 7	What are statistics and why do we use them?	Chapter 1 Youtube video The Best Stats you have ever seen, Hans Rosling https://www.youtube.com/watch?v=hVimVzgtD6w
Sept 14	Levels of Measurement: Characteristics and Preparation of data **Lab One Due**	Chapter 2
Sept 21	Measures of Centre (Descriptive statistics)	Chapter 3/4
Sept 28	Measures of Dispersion **Lab 2 Due**	Chapter 3/4
Oct 5	Spatial Descriptive Statistics **Midterm 1 (20%)**	Chapters 3/4
Oct 12	READING WEEK	
Oct 19	Inferential Statistics- Probability	Chapters 5/6
Oct 26	Inferential Statistics – Distributions **Lab 3 Due**	Chapters 5/6
Nov 2	Sampling and Confidence Intervals **Midterm 2 (20%)**	Chapters 7/8
Nov 9	Test of Differences – Hypothesis testing	Section IV
Nov 16	Test of Differences of Means **Lab 4 Due**	Section IV
Nov 23	Test of Relationships – Spatial Patterns	Section V
Nov 30	Correlation **Lab 5 Due**	Section VI
Dec 8	**Final project due**	None

SENATE REGULATIONS

Senate regulations, which apply to all courses, require that the following information be included in course outlines:

1. An indication of the topics to be covered.

2. An indication that all topics listed on the outline may not be covered.

3. A reading list or other indication of the amount of reading expected in the course.

4. A list of all items of work on which the final grade is based and an indication of the weight of each individual item of work.

5. Final grades in pass/fail courses include S (Standing) or F (Failure). Senate approved grades for all other courses include A+, A, A-, B+, B, C+, C, D and F. While the University does not have a standardized numerical grade conversion scale for letter grades, all course outlines must include written guidelines specifying a numerical (percentage) range for letter grades assigned to individual items of work and the course final grade. Final grades shall be approved by the Department Review Committee and may be subject to change.

6. If students are to be given marks for participation and/or attendance, students must be provided with clear assessment criteria.

7. An indication of when the items of work will be administered/submitted, and penalties, if any, for late submission of work. A minimum of 20% of the work on which the final grade is based must be evaluated and available to the student before the voluntary withdrawal date. Exceptions may be made with the prior approval of the DRC in courses such as Directed Readings, Projects, and Thesis courses, but this must be noted on the course outline.

8. An indication of equipment authorized for use in tests/exams (e.g., calculators, dictionaries, handheld devices).

9. Regarding the date of the last test/exam or the due date for the last item of work, such as an essay or project, be advised that Senate does not allow term tests to be administered during the 12th week of regularly scheduled classes (i.e., during the last 3 hours of the course); such tests must be administered during the exam period (the two weeks, or so, following the 12th week of lectures). However, the last item of work (e.g., research paper, essay) may be submitted at the last class, or at a specified time up to and including the scheduled final examination date. Lab exams may be held during the 12th week and on the days between the last scheduled class and the final exam period.

10. The voluntary withdrawal date, without academic penalty:

    November 17, 2020 for Fall courses which begin in September 2020 and end in December 2020;

11. The dates the University is closed for holidays, irrespective of campus closure related to COVID-19:

    September 7 (Labour Day), Thanksgiving Day (October 12), November 11 (Remembrance Day), February 15 (Louis Riel Day), April 2 (Good Friday).

12. Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work or examinations without penalty. A list of religious holidays can be found in the 2020-21 Undergraduate Academic Calendar.

13. Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams or during lectures/laboratories are encouraged to contact Accessibility Services (AS) at 204.786.9771 or https://www.uwinnipeg.ca/accessibility-services/ to discuss appropriate options. All information about a student's disability or medical condition remains confidential.

14. Reference to the appropriate items in the Regulations & Policies section of the *Course Calendar*, including Senate appeals and academic misconduct (e.g. plagiarism, cheating) https://www.uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf Instructors should become familiar with the procedures for dealing with alleged academic misconduct at https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf

15. All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found at https://www.uwinnipeg.ca/respect/.

THE UNIVERSITY OF WINNIPEG

---

1. A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.

2. Students can find answers to frequently ask questions related to remote learning here: https://www.uwinnipeg.ca/covid-19/remote-learning-faq.html.

3. If you assign a grade for participation, please set clear expectations for students, depending on the mode of delivery.

4. The method of delivery and submission of graded work should be specified, as well as the type of equipment/resources authorized for use in tests/exams.

5. When it is necessary to cancel a class due to exceptional circumstances, every effort will be made to inform students via UWinnipeg email (and/or using the preferred form of communication, as designated in this outline).

6. Students have the responsibility to regularly check their UWinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or their course instructors**.**

   [Identify the mode of communication you prefer, if other than UWinnipeg e-mail.]

7. Please note that withdrawing before the VW date does not necessarily result in a fee refund.

8. The first day of class is [*date*]. Last class will be held on [*date*]. Make-up classes will be held on [*list the dates*]. Evaluation period is [*dates*].
   [*See* https://www.uwinnipeg.ca/academics/calendar/docs/dates.pdf *for all dates*]

9. **Regulations, Policies, and Academic Integrity.** Students are encouraged to familiarize themselves with the "Regulations and Policies" found in the University *Academic Calendar* at: https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf. Particular attention should be given to subsections 8 ("Student Discipline"), 9 ("Senate Appeals"), and 10 ("Grade Appeals"). Please emphasize the importance of maintaining academic integrity, and to the potential consequences of engaging in plagiarism, cheating, and other forms of academic misconduct. Even "unintentional" plagiarism, as described in the UW Library video tutorial "Avoiding Plagiarism" (https://www.youtube.com/watch?v=UvFdxRU9a8g) is a form of academic misconduct. Similarly, uploading essays and other assignments to essay vendor or trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) is a form of misconduct, as it involves "aiding and abetting" plagiarism. More detailed information can be found here:
   Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/policies/academic-misconduct-procedures.pdf.
   Clear expectations for assignments, tests, and exams should be set for students to avoid instances of "unintentional" misconduct. For instance, if an exam is "take-home", students should be advised on permitted resources, being able to collaborate (or not) with other students, *etc*.
10. **Respectful Learning Environment.** Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies (*e.g. Respectful Working and Learning Environment Policy* https://www.uwinnipeg.ca/respect/respect-policy.html, *Acceptable Use of Information Technology Policy* https://www.uwinnipeg.ca/institutional-analysis/docs/policies/acceptable-use-of-information-technology-policy.pdf) could be considered "non-academic" misconduct. More detailed information can be found here:

Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/institutional-analysis/docs/student-non-academic-misconduct-procedures.pdf.
Instructors whose mode of delivery includes Zoom or a similar platform should clarify expectations for appropriate "remote classroom" behaviour or decorum (being on time, muting/unmuting, raising hand, reacting, *etc.*), and make appropriate allowances in order to respect the privacy of students (*e.g.* clarifying need to have video on/off).

11. **Copyright and Intellectual Property.** Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor/presenter before, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the *Academic Misconduct* or *Non-Academic Misconduct Policy*; such consequences could possibly involve legal sanction under the *Copyright Policy* (https://copyright.uwinnipeg.ca/docs/copyright_policy_2017.pdf).

12. **Research Ethics**. Students conducting research interviews, focus groups, surveys, or any other method of collecting data from any person, including a family member, must obtain research ethics approval before commencing data collection. Exceptions are research activities done in class as a learning exercise. For submission requirements and deadlines, see http://www.uwinnipeg.ca/research/human-ethics.html

13. **Privacy.** Students should be reminded of their rights in relation to the collecting of personal data by the University (https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html), especially if Zoom is being used for remote teaching (https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html) and testing/proctoring (https://www.uwinnipeg.ca/privacy/zoom-test-and-exam-proctoring.html).