

GEOG 2210B – Introduction to Spatial Analysis

Course Outline: Section 001 Winter 2019

1. Course Information

1.1. Classroom Location:

Class Location and Time:

UCC-37, Tuesday, 10:30am to 12:30pm

Lab Location and Time:

SSC 1316A, Section 002 (Tuesday, 1:30pm to 3:30 pm), Section 003 (Wednesday, 12:30pm to 2:30pm), Section 004 (Wednesday, 2:30pm to 4:30pm)

1.2. Contact Information:

Instructor: Nolan Pearce (PhD Candidate)

Office: SSC 2404

Office Hours: by appointment

Phone: NA

Email: npearce7@uwo.ca

2. Calendar Description

2.1. Course Description

An introduction to the nature of geographical data and the application of quantitative and statistical techniques and computing systems to spatial analysis; models of spatial data, probability, distributions, hypothesis testing and correlations.

2 lecture hours, 0.5 course

Antirequisite(s): Biology 2244A/B, Economics 2122A/B, Economics 2222A/B, Health Sciences 3801A/B, MOS 2242A/B, Psychology 2810, Psychology 2820E, 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, former Psychology 2885 (Brescia), former Statistical Sciences 2122A/B, former Social Work 2205.

Prerequisite(s): 1.0 course from Geography 1100, Geography 1300A/B, Geography 1400F/G, Geography 1500F/G, Geography 2131A/B, Geography 2153A/B, Environmental Science 1021F/G; or enrolment in the Major in Physical Geography or in an Honors Earth Science Program for Professional Registration.

Prerequisite checking is the student's responsibility

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

Burt et al. (2009), *Elementary Statistics for Geographers*, 3rd Edition, The Guilford Press. (required)

Kumar (2005), *Research Methodology*, 2nd Edition, SAGE Publications. (recommended)

Copies of the text are available on 2-hour reserve at the Weldon Library.

4. Course Objectives and Format

This course introduces students to research design and methodology with a focus on data description and analysis. It presents the general concepts of conducting research with a focus on the key aspects of study design. The course emphasizes techniques for analyzing qualitative and quantitative data by teaching the fundamental underpinnings of statistical methods.

The course will be taught through a combination of lecture and lab exercises.

5. Learning Outcomes

By the end of the semester, you will:

- Have a thorough understanding of the basic components of research methodology including, formulating a research problem, conceptualizing a research design, collection and processing of data.
- Have a basic understanding of the fundamentals and theoretical underpinnings of statistical analysis of data.
- Be able to utilize basic statistical methods.
- Be able to critically evaluate the work of others who employ statistical methods.

6. Evaluation

6.1. Laboratory Exercises and Assignments

Laboratory exercises are the means by which you gain practical experience of material discussed in lectures. They provide an opportunity to explore and learn. Although a portion of marks are awarded for these exercises, note that they are primarily instructional rather than evaluative.

Material required for laboratory exercises are taught in the preceding lecture. Considerable effort has been made to incorporate background information, examples and guidance in the exercise materials. Each exercise consists of a brief explanation with worked examples of the particular statistical technique explored in the exercise, relevant applications and examples, followed by the actual exercise. The material and explanations make reasonable assumptions

about your knowledge of earlier material. Review and definition of questions prior to lectures and exercises, combined with cumulative understanding are key to this course.

Effective and full use of the laboratory time is a key to success in the course; therefore, you are required to attend lab classes. The effectiveness of a laboratory session depends on your preparation and diligence in using the allocated time slot. You must start working on the lab exercise beforehand, and, during the allotted two-hour slot, work with the Teaching Assistant on difficulties and barriers you have encountered. You should bring a calculator to all lab classes.

Electronic versions of all assignments will be handed in via OWL prior to the beginning of the next laboratory session on the due date provided on the course outline (usually one week later, see late policy). It is the student's responsibility to ensure that completed assignments are properly uploaded to OWL – no exceptions. Graded exercises will be returned prior to the lab after they are due.

6.2. Examinations

There will be a midterm exam and a final examination. The mid-term exam (1.5 hours) will be held during lecture in early-March. The final examination (3 hours) will be scheduled during the examination period at the end of the winter term. The midterm and final examinations assess knowledge of lecture, lab and assigned reading materials. Both examinations will consist of multiple choice questions.

Evaluation Components	Percentage of Course Grade	Assignment Schedule
Lab Assignments	30% (6% for each of 5 assignments)	Varied (see section 14.3.)
Midterm Exam	35%	March 5, 2019
Final Exam	35%	TBD

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text.

Your evaluation will base on your knowledge of course materials as substantiated in the midterm tests, final exam, class and tutorial participations. It may not be easy to get a good mark in this course. Here are some ways that may help you obtain a mark of 70 or above in this course. Attend and participate lecture and laboratory sessions. Before class, make sure you read the entire lecture and reading materials and bring to class concepts, theories and terms that are not clear for you. During class, take reasonable notes, ask questions for clarification of any terms, concepts or theories you have not understood. After class, combine your notes on assigned reading materials and the one you took in the class and learn an integrated concepts, theories and definitions. Ask for help in case you need additional clarification using office hours and tutorial sessions.

6.3. Course Policies

6.3.1. Non-Medical Absences and Late Policy

Non-medical absences without genuine extenuating circumstances from mid-term and final exams will result in a grade of 0%. There are no academic repercussions for non-medical absences from lab or lecture periods – attendance and participation will not be recorded – however, regular attendance is strongly recommended.

All lab assignments must be handed in before the allocated deadline for the student's assigned lab section. Late submissions will be penalized at a rate of 10% per day for the first seven days. A mark of 0% will be recorded if work is submitted more than a week late. *Per day* is defined each 24-hour period succeeding the allocated assignment deadline – not midnight.

If you have genuine non-medical extenuating circumstances and will not be able submit an assignment on time, you may submit a written request for extension, clearly outlining why you should be granted an extension. This request must be submitted to the course instructor at least seven days before the assignment is due. These extensions are not guaranteed and do not apply to mid-term and final examinations.

6.3.2. Accommodation for Medical Illness:

Students seeking academic accommodation on medical grounds for missed exams or assignments worth any percentage 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. Please refer to Western's [Policy on Accommodation for Illness](#) and the [Academic Handbook](#). See section 11 for more information.

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. Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams must be provided the Academic Counselling Office and Instructor within 48 hours of the scheduled exam. For missed exams, you must take your documentation to Academic Counselling within 48 hours of the 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.

8. Use of Electronic Devices

No electronic devices, excepting calculators, will be allowed during examinations.

A reasonable quality calculator is required for the laboratory exercises and the examinations. One with statistical functions (normally a " Σ " key) may be most useful for this course, but any calculator with square root and square functions will suffice. It is your responsibility to know how to use your calculator, and to ensure its functionality during examinations.

9. 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.

10. 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.

11. Medical Issues

The University recognizes that a student's ability to meet his/her academic responsibilities may, on occasion, be impaired by medical illness. The Student Services website provides greater detail about the University's policy on [medical accommodation](#). This site provides links the necessary forms. In the event of illness, you should contact Academic Counselling as soon as possible. The Academic Counsellors will determine, in consultation with the student, whether or not accommodation should be requested. They will subsequently contact the instructors in the relevant courses about the accommodation. Once the instructor has made a decision about whether to grant an accommodation, the student should contact his/her instructors to determine a new due date for tests, assignments, and exams.

Students must see the [Academic Counsellor](#) and submit all required documentation in order to be approved for certain accommodation.

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

[Student Support Services](#)

[Student Development Services](#)

14. Important Dates

14.1. University Schedule

January 7: Classes resume

January 15: Last day to add a second term half course

February 18: Family Day – Department Office Closed

February 18 to 22: Spring Reading Week (No classes; Department Office open)

March 7: Last day to drop a second term half course without penalty

April 9: Classes end

April 10: Study day

April 11-30: Examination Period

14.2. Lecture Schedule

Date	Lecture Topic	Associated Readings
Jan. 8	Course Introduction, Overview of Research Process	Kumar (Ch. 1-2)
Jan. 15	Formulating a Research Problem	Kumar (Ch. 4-6)
Jan. 22	Research Design	Kumar (Ch. 7-8)
Jan. 29	Data Collection, Sampling, Data	Kumar (Ch. 9,12), Burt et al (Ch. 1,6)
Feb. 5	Displaying and Interpreting Data	Burt et al (Ch. 2)
Feb. 12	Describing Data with Statistics	Burt et al (Ch. 3)
Feb. 19	No Lectures - Reading Week	
Feb. 26	Random Variables and Probability Distributions	Burt et al (Ch. 5)
Mar. 5	Mid-term Exam	
Mar. 12	Hypothesis Testing	Burt et al (Ch. 8,9)
Mar. 19	Hypothesis Testing	Burt et al (Ch. 8,9)
Mar. 26	Analysis of Variance	Burt et al (Ch. 11)
Apr. 2	Correlation and Linear Regression	Burt et al (Ch. 4,12)
Apr. 9	Correlation and Linear Regression	Burt et al (Ch. 4,12)

14.3. Lab Schedule

Week #	Lab Topic	Due Date (specific to assigned lab section)
Week 1	No Lab	
Week 2	No Lab	
Week 3	No Lab	
Week 4	No Lab	
Week 5	No Lab	
Week 6	Lab #1 – Data Compilation and Presentation	
Week 7	No Lab - Reading Week	
Week 8	Lab #2 – Descriptive Statistics	Lab #1 due
Week 9	No Lab – mid term	
Week 10	Lab #3 – Probability Distributions	Lab #2 due
Week 11	Lab #4 – T-tests and F-tests	Lab #3 due
Week 12	Lab #5 – ANOVA	Lab #4 due
Week 13	No Lab	Lab #5 due
Week 14	No Lab	