

Western University
Department of Geography and Environment
GEOGRAPHY 3211A: Spatial Statistics
Course Outline: Section 001 Fall 2020

	Lectures	Labs
Location:	Distance Studies/Online	SSC#1059
Days:		Monday
Hours:		4:30 – 6:30pm

Prerequisites: Third or fourth year status at the University, Geography 2220A/B and one of Geography 2210A/B, Biology 2244A/B or Statistical Sciences 2244A/B, or other equivalent, or permission of the instructor.

“Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may 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.”

Instructor Information

Name: Jacek Malczewski

Contact information:

Office: Zoom meeting

Virtual office hour: Tuesday 10:30 – 12:00 or by appointment via email

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TA Information

Name: Vali Vakhshoori

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Virtual office hour: Monday 3:00 – 4:00 or by appointment via email

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Course Syllabus

“Topics include exploratory spatial data analysis, global and local spatial statistics, spatial autocorrelation, spatial regression models, and geographically weighted regression. The emphasis will be on developing analytical skills with practical applications using statistical software and Geographic Information Systems”.

Course Objectives and Format

There are four objectives of this course:

- (i) to apply a variety of spatial statistical methods to geographical data,
- (ii) to acquire problem solving skills with geographical data,
- (iii) to acquire skills in using GIS and statistical software for analyzing geographical data,
- (iv) to interpret results obtained by using methods of spatial statistics.

The course material is cumulative. Therefore you should review lectures and readings weekly - do

not expect success if you only study and practice before exams. This course is also problem based, and applied - you must do all exercises in order to fully understand the material and successfully complete the course.

This is in a hybrid online/in-classroom-based course that will cover theoretical and applied concepts through lectures, assignments, and readings.

Lectures 1, 2, 3 and 4 will be delivered asynchronously. New lectures will be released weekly. These will consist of pre-recorded PowerPoint/Audio Units that you may access from the Lessons module on the OWL site.

Labs 1, 2, and 3 and will take place in SSC-1059. New lab assignments will be posted under the Assignment module on the OWL site 2 days before scheduled lab date.

Integrated lecture 5 and lab 4 will be delivered in-classroom.

SCHEDULE

Date	Topic	Lectures PowerPoint/Audio Unit #	Required readings
14/09/2020	Introduction to spatial statistics	1.1, 1.2	
21/09/2020	Exploratory spatial data analysis (Lab1)	2	Anselin, pp. 43-91; 165-188
28/09/2020	Spatial weights and lagged variables	3.1	Anselin, pp. 106 -164
05/10/2020	Spatial autocorrelation (Lab 2)	3.2, 3.3	
12/10/2020	Thanksgiving Holiday		
19/10/2020	Test I		
26/10/2020	Spatial regression (Lab 3)	4.1, 4.2, 4.3	Anselin, pp. 189-223
02/11/2020	Fall Reading week		
09/11/2020	Spatial regression	4.4	
16/11/2020	Test II		
23/11/2020	Geographically weighted regression	5	Charlton and Fotheringham
30/11/2020	Geographically weighted regression (Lab 4)		
07/12/2020	Quiz		

Note: lecture slides and audio recordings are the copyright of the instructor, and may not be disseminated, shared, or made available online.

Course Materials

Anselin L. (2005) *Exploring Spatial Data with GeoDa: A Workbook*

<https://s3.amazonaws.com/geoda/software/docs/geodaworkbook.pdf>

Charlton M. and **S. Fotheringham** (2009) Geographically Weighted Regression: A Tutorial on using GWR in ArcGIS 9.3 and White Paper, National Centre for Geocomputation: National University of Ireland. <http://publish.uwo.ca/~jmalczew/GWR.zip>

Methods of Evaluation

LAB SCHEDULE

Date	Topic	% of final mark	Due date
21/09/2020 (on campus)	Exploratory spatial data analysis	8	05/10/2020
05/10/2020 (on campus)	Spatial autocorrelation	8	19/10/2020
26/10/2020 (on campus)	Spatial regression	8	16/11/2020
23/11/2020 (on campus)	Geographically weighted regression	8	07/12/2020
30/11/2020 (on campus)			

1. The lab component of the course consists of four assignments worth 32% of your final grade.
2. Assignments will be explained and discussed during lab sessions.
3. Computer software (GeoDA and ArcGIS) will be used in the preparation of the assignments. It is essential that students unfamiliar with computers and quantitative analysis take extra time (in addition to regular lab time) to familiarise themselves with software to be used in this course.
4. ***An assignment loses 20% of its total possible value for each day late. Assignments more than 3 days late will not be accepted.*** Medical and compassionate grounds, accomplished by suitable documentation, may be accepted as justification for late assignment submission.
5. 15% of each assignment grade is for proper layout and organization and neatness.
6. While you are encouraged to study with others in the class, **your work must always be your own** (see *Statement on Academic Offences* below)

Your grades will be based on composite performances for the following:

Assignments	32%
Test I (on-line/open-book, 1.5 hours, Oct. 19, 2020)	34 % (Units 1, 2, and 3)
Test II (on-line/open-book, 1 hour, Nov. 16, 2020)	22 % (Unit 4)
Quiz (on-line/open-book, 30 minutes, Dec. 7, 2020)	12 % (Cumulative)

Students are responsible for material covered in the lectures as well as the assigned readings. The tests and quiz are designed to assess individual competence in course material. An open-book format applies. However, 'open book' here means you are free to use required readings and any material provided to you on your OWL course site. **All work must be done independently.** Not adhering to these conditions will be considered a scholastic offence (see *Statement on Academic Offences* below)

In accordance with university policy, missed tests and exams cannot be made up except on written medical grounds and notification prior to test/exam date. Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components 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.

Make-up Examinations

Makeups will be granted with approved documentation only. All documentation for missed exams/tests 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.

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

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the term, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For Western University policy on Consideration for Student Absence, see [Policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs](#) and for the Student Medical Certificate (SMC), see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

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](#).

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving 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.

Statements concerning Online Etiquette

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- Please “arrive” to class on time
- Please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)
- Ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- To minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak
- Please be prepared to turn your video camera off at the instructor’s request if the internet connection becomes unstable
- Unless invited by your instructor, do not share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- Remember to unmute your microphone and turn on your video camera before speaking
- Self-identify when speaking
- Remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

Additional Statements

Statement on 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, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf”

“All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).”

“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.”

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 661-2111 x 82147 for any specific question regarding an accommodation.

Mental Health

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit the site below for more information on mental health resources:

<http://www.uwo.ca/uwocom/mentalhealth/>.

Support Services

Registrarial Services: <http://www.registrar.uwo.ca/>

Student Development Services: <http://www.sdc.uwo.ca/>

Social Science Academic Counselling: <http://counselling.ssc.uwo.ca/>

Important Dates

September 9: Classes resume

September 17: Last day to add a first term half course

October 12: Thanksgiving Holiday

November 2-8: Fall reading week

November 12: Last day to drop a first term half course without penalty

November 30: Last day to drop a full course without penalty

December 9: Classes end

December 10: Study day

December 11-22: Examination period