GEOG 9411 – Geographic Data Science with Python
Course Outline: Winter 2025

1. Course Information

1.1. Classroom Location:

Class Location and Time:
Mondays - 3:30-5:30pm
SSC 1316A

1.2. Contact Information:

Instructor: Dr. Jinhyung Lee
Office Hours: By appointment
Email: jinhyung.lee@uwo.ca

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.

Please visit the "Accessibility at Western" website for more information.

2. Calendar Description

Course Description

This seminar is targeted at graduate students within the Department of Geography & Environment and the Faculty of Social Science and will introduce them on how to use Python programming language to do Geographic Data Science (GDS) in a reproducible way. Topics covered include: 1) building blocks (e.g., computing tools, spatial data & weights) of GDS, 2) spatial data mapping and analysis (e.g., cluster analysis), and 3) advanced topics (e.g., spatial inequality dynamics, regression). The goal is to bring students up to speed on frontiers in geographic data science and computing. No prior knowledge on GDS or coding is required.

2 hours/week, 0.5 course
Antirequisite(s): None
Prerequisite(s): None. Basic understanding of GIScience, geocomputation, and data analysis will be an asset. Prerequisite checking is the student's responsibility

3. Textbook

A **required textbook** of this course is:

- **Sergio J. Rey, Dani Arribas-Bel, Levi J. Wolf, *Geographic Data Science with Python*.**

It is an open-source, freely available online textbook. You can find the textbook here: https://geographicdata.science/book/intro.html

4. Course Objectives

The main objectives of this course are two folds:

1) Learn how to do geospatial (urban) data analysis in a reproducible/automated way using a programming language Python

2) Being able to conduct a research project from start to finish using skillsets obtained in this course and Python

5. Evaluation

Evaluation Component	Percentage of Course Grade	Assignment Schedule
Topic Presentation	25%	Varies
Final Project Idea Presentation (oral)	10%	Feb 24 2025
Final Project Outcome Presentation (oral)	20%	Mar 31 2025
Final Project Outcome Report (written)	45%	TBD

Students are responsible for material covered in the lectures as well as the assigned chapters/sections in the text. Students are ***REQUIRED TO COMPLETE ALL COMPONENTS*** of this course. There are no exceptions to this. Extra assignments to improve grades ***will NOT*** be accepted.

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.

6. Course Schedule

Week	Dates (Monday)	Topic	Presenter/discussion leader
1	Jan 6	No class	N/A
2	Jan 13	Course overview & Python environment set-up CyberGISX + Python intro	Lee
3	Jan 20	Spatial data & spatial weights	
4	Jan 27	Mapping spatial data	
5	Feb 3	Global spatial autocorrelation	
6	Feb 10	**Reading week (No class)**	
7	Feb 17	Local spatial autocorrelation	
8	Feb 24	**Final Project Idea Presentation**	All
9	Mar 3	Point pattern analysis	
10	Mar 10	Inequality analysis	
11	Mar 17	Spatial regression	
12	Mar 24	Work on Final Project - No class	
13	Mar 31	**Final Project Outcome Presentation**	All

7. University Policy Regarding Illness

7.1. Illness

Please visit the link to the university policy for more information.

http://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID= - Page_12

If you feel that you have a medical or personal concern that is interfering with your work, you should contact your Instructor, Graduate Program Administrator, Supervisor, or SGPS.

7.2. Attendance

It is expected that students will attend all classes. The professor does not provide access to lecture notes. Students are encouraged to obtain missed lecture notes from a fellow student.

8. Scholastic Discipline for Graduate Students

For the complete policy and regulations visit the Graduate and Postdoctoral Studies website

9. Procedures for Appealing Academic Evaluations

Students may appeal an academic decision or ruling in accordance with the appeal procedures set out below. Students have a right to appeal to their graduate programs and, if unsuccessful, to the Vice-Provost (Graduate and Postdoctoral Studies). Some decisions may be appealed further to the Senate Review Board Academic. The Vice-Provost's rulings in academic matters are final unless overturned or modified on appeal to the Senate Review Board Academic (SRBA).

For the complete policy and regulations visit the Graduate and Postdoctoral Studies website

10.Support Services

10.1. Support Services

Student Support Services

Student Development Services

Students who are in emotional/mental distress should refer to Mental Health@Western for a complete list of options about how to obtain help.

10.2. Short Absences

If you miss a class due to minor illness or other problems, check your course outline for information regarding attendance requirements and make sure you are not missing a test or exam. Cover any readings and arrange to borrow the missed lecture notes from a classmate.

10.3. Extended Absences

If you expect to be away from campus for an extended amount of time, please make prior arrangements with your course instructors and/or supervisor.

For the complete policy on registration visit the Graduate and Postdoctoral Studies website.

10.4. Academic Concerns

If you are in academic difficulty, it is strongly recommended that you see your Graduate Program Administrator, Supervisor, or SGPS.

11.Other Information

For a list of Graduate Regulations please visit the Graduate and Postdoctoral Studies website

For The University of Western Ontario Senate Regulations, please see the Handbook of Academic and Scholarship Policies

Email Policies

Please respect the fact that Professors receive multiple emails from students and will deal with those emails in a fair, organized and timely manner. Please ensure the subject line contains the name, number and section of the course in question.