

GEOG 9410 – Urban Data Analysis

- Geographic Data Science with Python -

Course Outline: Winter 2022

1. Course Information

1.1. Classroom Location:

Class Location and Time:

Mondays - 5:00-7:00pm

Zoom

1.2. Contact Information:

Instructor: Dr. Jinhyung Lee

Office Hours: By appointment only over Zoom

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 Geography and Social Science Masters and PhD students and will introduce them to the emerging topics and methodologies in urban (big) data analytics, GeoAI, and GIScience. The goal is to bring students up to speed on frontiers in spatial data science and urban computing. With this, the theme of the course may be adjusted on a yearly basis, following research trends in urban GIScience and students' needs. **In the 2022 Winter Semester, the seminar will focus on Geographic Data Science with Python.**

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>

Selected readings such as news articles and journal papers related to the course topics could be posted to the OWL course website. Stay tuned!

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	12.5%	Varies
Final Project Proposal (written)	25%	TBD
Final Project Proposal Presentation (oral)	12.5%	Feb 28, 2022
Final Project Outcome Report (written)	50%	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. Lecture and Examination Schedule

Week	Dates (Monday)	Topic	Presenter/discussion leader
1	Jan 10	Course overview & Python environment set-up	Lee
2	Jan 17	Python intro, Jupyter Notebook	Lee
3	Jan 24	Spatial data & spatial weights	Hutchenreuther
4	Jan 31	Mapping spatial data	Sutton
5	Feb 7	Global spatial autocorrelation	Kessie
6	Feb 14	Local spatial autocorrelation	Chang
7	Feb 21	Reading week (No class)	N/A
8	Feb 28	Final Project Proposal Presentation	Lee
9	Mar 7	Point pattern analysis	Ho
10	Mar 14	Spatial inequality dynamics	Chiu
11	Mar 21	Clustering & regionalization	Shan
12	Mar 28	Spatial regression	Ahmed
13	Apr 4	Final Project Outcome Presentation	Lee

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](mailto:MentalHealth@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. Important Dates:

January 10: Classes resume

January 18: Last day to add a second term half course

February 21: Family Day – Department Office Closed

February 21-25: Spring Reading Week (No classes; Department Office open)

March 14: Last day to drop a first term half course without penalty

April 8: Classes end

April 9: Study day

April 10-31: Examination Period

12. 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.