

## GEOG 3226A – Urban Data Science Course Outline: Section 001 Fall 2021

### 1. Course Information



	Delivery Mode	Day/Time	Location
Lecture	In-person	<b>Mondays, 18:30-20:30</b>	<b>SSC 1059</b>
Lab	In-person	<b>Tuesdays, 18:30-20:30</b>	<b>SSC 1059</b>

\*Details about design and delivery of the course are listed below in Section 5

Classes Start	Fall Reading Week	Classes End	Study day(s)	Exam Period
September 8	November 1-7	December 8	December 9	December 10-21

September 16, 2021: Last day to add a first-term half course

October 11, 2021: Thanksgiving Holiday

November 12, 2021: Last day to drop a first term half course without penalty



Course Instructor	Contact Information	Office Hours
<b>Dr. Jinyung Lee</b>	<a href="mailto:jinyung.lee@uwo.ca">jinyung.lee@uwo.ca</a>	Thursdays, 14:00-16:00 or by appointment via email

Teaching Assistant(s)	Contact Information	Office Hours
<b>Mr. John Hutchenreuther</b>	<a href="mailto:jhutche5@uwo.ca">jhutche5@uwo.ca</a>	TBD

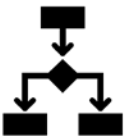
### 2. Calendar Description

Introduces a computational social science approach to process, analyze, and visualize urban data in a reproducible way. Modern data science toolkits to support better decision making in urban development and planning contexts will be presented. Topics covered include exploratory/statistical/agent-based urban models, network analysis, applied machine learning, and advanced data visualizations.

**2 lecture hours, 2 laboratory hours, 0.5 course**

Prerequisite(s): Third or fourth year-status, GEOG 2220A/B or equivalent, or permission from the instructor.

Prerequisite checking is the student's responsibility



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

A **REQUIRED** textbook is below:

Alex Singleton, Seth Spielman, David Folch, *Urban Analytics* (2018), ISBN 1473958628, Sage Publications.



**AVAILABLE at Book Store:** <https://bookstore.uwo.ca/product/9781473958630>

**E-textbook is also AVAILABLE here:** <https://www.vitalsource.com/products/urban-analytics-alex-d-singleton-v9781526418593?term=9781526418593>

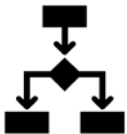
All other course material including lecture slides and lab tutorials will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

### 4. Course Objectives and Format

#### Course objectives:

- I. Understand the fundamental concepts, theories, and models of urban data analytics.
- II. Have necessary quantitative, GIS, and R programming skills for analyzing urban issues and problems through a series of hands-on lab exercises.
- III. Identify urban problems/research questions, solve them in a reproducible way using spatial analysis/visualization techniques through final term projects.

Mode	Dates	Time	Frequency
Lecture – in-person	Mondays	18:30 – 20:30 EST	Weekly
Lab – in-person	Tuesdays	18:30 – 20:30 EST	Weekly



Google Chrome or Mozilla Firefox are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#). [Using the right browser is important, especially when using different features integrated with OWL]

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

## 5. Course Content and Schedule

### General

Week	Dates	Topic	Reading	Lab	Final Project
1	Sept 8-10	N/A			
2	Sept 13-17	Course Introduction		Lab 1	
3	Sept 20-24	What is Urban Analytics?	Ch. 1, 3	Lab 2	
4	Sept 27-Oct 1	Data and Computation Software	Ch. 2, 3	Lab 3	
5	October 4-8	Urban Visualization and Mapping	Ch. 4	Lab 4	Introduction
6	October 11-15	<b>Exam 1</b>			
7	October 17-22	Geodemographic Analysis: Differences within Cities	Ch. 5	Lab 5	
8	October 24-29	Urban Models: Explaining Cities	Ch. 6	Lab 6	
9	November 1-5	Reading Week			
10	November 8-12	Network and Transport Analysis	Ch. 8	Lab 7	Proposal
11	November 15-19	<b>Exam 2</b>		Lab 8	
12	November 22-26	Agent-based Urban Simulations	Ch. 7	Lab 9	
13	Nov 29- Dec 3	Future of Urban Analytics in Smart Cities	Ch. 9	Lab 10	
14	December 6-8	Urban Analytics at Western			Outcome Submission (Date TBD)



### Lab

	Topic	Lab session date	Due date
Lab 1	Introduction to R and R studio	Sept 14	Sept 20
Lab 2	Data Wrangling in R	Sept 21	Sept 27
Lab 3	Descriptive Statistics and Charts/Graphs	Sept 28	Oct 4
Lab 4	Data Visualization – Part 1	Oct 5	Oct 11
Lab 5	Data Visualization – Part 2	Oct 19	Oct 25
Lab 6	Geodemographics and Urban Indices	Oct 26	Nov 1
Lab 7	Geographic Relationships and Regression	Nov 9	Nov 15
Lab 8	Network Analysis	Nov 16	Nov 22
Lab 9	Public Transit Analysis	Nov 23	Nov 29
Lab 10	Agent-based Models	Nov 30	Dec 6

## Exam

	Scope	Time	Format
Exam 1	Week 2-5	Oct 12 (18:30 – 19:15)	In-class, closed book
Exam 2	Week 7-10	Nov 15 (18:30 – 19:15)	In-class, closed book

## Final project

	Due Date
Proposal	November 7
Outcome submission	TBD

## 6. Communication



- Students should check the OWL site every 24 – 48 hours
- A weekly update will be provided on the OWL announcements
- For any other communication, the centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).
- Emails will be monitored daily; students will receive a response in 48 hours
- This course will use the OWL forum for discussions
- Students should post all course-related content on the discussion forum so that everyone can access answers to questions
- The discussion forums will be monitored daily by instructors or teaching assistants

## 7. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Weighting
Labs	40%
Exams	40%
Final Project	20%



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

- All assignments are due at 11:55 pm EST unless otherwise specified
- Written assignments will be submitted to Turnitin (statement in policies below)
- Students will have unlimited submissions to Turnitin
- Rubrics will be used to evaluate assessments and will be posted with the instructions
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail



**Information about late or missed evaluations:**

- Late assessments without illness self-reports will be subject to a late penalty 5 %/day
- Late assessments with illness self-reports should be submitted within 24 hours of submission of the last illness self-report
- An assessment cannot be submitted after it has been returned to the class; [an alternate assessment will be assigned] OR [the weight will be transferred to the final grade]

**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.**

## 8. 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](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](#).

## **9. How to Be Successful in this Class:**

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.

1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Follow weekly checklists created on OWL or create your own to help you stay on track.
4. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively.
5. Connect with others. Try forming a study group and try meeting on a weekly basis for study and peer support.
6. Do not be afraid to ask questions. If you are struggling with a topic, check the online discussion boards or contact your instructor(s) and or teaching assistant(s).
7. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.



## 10. **Continuity of Education Plan (in-person class pivoting to online learning)**

In the event of a COVID-19 resurgence during the course that necessitates the university to direct courses move 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.

## 11. **Information on COVID-19**

### **Masking Guidelines**

Students will be expected to wear triple layer, non-medical, paper masks at all times in the classroom as per University policy and public health directives. Students who are unable to wear a mask must seek formal accommodation through Western Accessible Education, and present medical documentation.

Students are not permitted to eat or drink while in class to ensure masks stay in place. Students will be able to eat and drink outside of the classroom during scheduled breaks.

Students unwilling to wear a mask as stipulated by Western policy and public health directives will be referred to the Dean, and such actions will be considered a violation of the student Code of Conduct.

### **Course Absences due to Daily COVID Screening Questionnaire**

Missed assessments (e.g., presentations, essays, quizzes, tests, midterms, etc.) require formal academic considerations (typically self-reported absences and/or academic counselling).

## 12. **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.

## 13. **Western's Commitment to Accessibility**

The Department of Geography and Environment 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.

#### **14. 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.

#### **15. Support Services**

[Western's Support Services](#)  
[Student Development Centre](#)

#### **16. Important Dates**

September 8: Classes resume

September 16: Last day to add a first term half course

October 11: Thanksgiving Holiday – Department Office Closed

November 1 to November 7: Fall Reading Week (No classes; Department Office open)

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 8: Classes end

December 9: Study day

December 10-21: Examination Period