ENV 307H  Urban Sustainability
Winter 2022

I CONTACTS

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II Course Overview

LOCATIONS:
At least until 31 January, course lecture sessions, practical sessions, and office hours will be conducted via scheduled, recurring Zoom meetings. The possibility of in-person courses after this date will be assessed by the university based on available public health information. Ordinarily we have access to a GIS lab in Ramsay Wright (RW 109), but since this may not be possible you may wish to familiarize yourself with the MDL’s remote GIS lab. The software we will use this term (QGIS) will also work on Windows and Mac (High Sierra, 10.13 and newer) computers and is free.

MEETING TIMES / LOCATIONS:

- Lecture (all students)  
  Tuesdays 1200 – 1400  
  Digital  
  https://utoronto.zoom.us/j/86703733304  
  Meeting ID: 867 0373 3304  
  Passcode: 156213  
  In person (if possible)  
  ES B142

- PRA0101 – GIS Session  
  Tuesdays 1400 – 1530  
  Digital  
  https://utoronto.zoom.us/j/84292508041  
  Meeting ID: 842 9250 8041  
  Passcode: 949515  
  In person (if possible)  
  RW 109

- PRA0202 – GIS Session  
  Tuesdays 1530 – 1700  
  Digital  
  https://utoronto.zoom.us/j/87943519734  
  Meeting ID: 879 4351 9734  
  Passcode: 237915  
  In person (if possible)  
  RW 109
OFFICE HOURS:
Alstan’s Office Hours:
- Wednesdays 1300 – 1500
- Or by appointment

Digital
https://utoronto.zoom.us/j/85762455591
Meeting ID: 857 6245 5591
Passcode: 650641
In person (if possible)
DA 321

Anna’s Contact Hours
(TBD)

Sophie’s Contact Hours
(TBD)

COURSE DESCRIPTION:
This seminar course provides a broad overview of methods for the design and analysis of sustainable urban neighborhoods and cities. Subtopics within this field that students will learn about include: climate change & carbon emissions, walkability, water management, resource management, urban heat island and microclimate, growth and sprawl, energy production, and daylighting. The Urban Sustainability course will provide insight to these topics through theoretical discourse, case studies, and data-driven analyses of the weekly topics. Each week, approximately 1 hour and 20 minutes of the course will be dedicated to introductory analytical exercises using Geographic Information Systems (GIS) software making use of the extensive public Toronto GIS data available. This portion of the class will happen in the separate practical lab sessions (PRA0101 or PRA0201).

There are two homework assignments focused on applying the GIS software learned in class, a midterm and final quiz, and a group analysis project focused on analyzing a specific course topic within Toronto. Final presentations will take place during class in Week 12 such that students can learn from the work of differing groups. Attendance will be taken weekly using a question response from the weekly reading, which is required.

STUDENT LEARNING OUTCOMES:
By the end of this course, a successful learner will be able to do the following:

1. Understand the impacts of urban areas on the environment, locally and globally.
2. Assess and discuss environmental concepts related to the design of urban areas.
3. Be able to describe and critique the sustainable aspects of an urban development based on objective data.
4. Analyze a subset of environmental issues based on measured data (in-class GIS activities and homework assignments).
5. Make recommendations towards sustainable urban development based upon novel analysis (group analysis project).

III HOW THE COURSE IS ORGANIZED
This course will be largely taught synchronously; however, all content that is digitally delivered will be recorded for asynchronous consumption later. The practical sessions (PRA0101/0201) will each have a short 30-minute asynchronous introduction video posted ahead of time, which you should watch prior to attending your assigned practical session.
Readings will be assigned each week related to the content discussed that week and are to be read prior to the following week.

During synchronous lecture sessions the following will occur each week: (a) deliver a lecture, (b) discuss the weekly case study and readings, (c) answer student questions, and (d) facilitate discussion. During synchronous practical sessions, we will engage a weekly activity through a digital, ‘hands-on’ session via Zoom (or in person). You should be prepared for this session by watching the asynchronous practical video ahead of time!

Participation in the course requires the submission of two homework activities, two quizzes, and a final analysis project. Attendance will be taken using a short Quercus quiz during each class period. If you are not able to attend a synchronous session due to illness or otherwise, please let me know as soon as possible, and register your absence with the Absence Declaration Tool on Acorn.

Assignments will be due on Fridays at 11:55 pm during the weeks indicated.

**WEEKLY COURSE SCHEDULE (1 – 3)**

<table>
<thead>
<tr>
<th>Date (Week)</th>
<th>Topic</th>
<th>Activities &amp; Assignments</th>
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</thead>
<tbody>
<tr>
<td>11 Jan (Week 1)</td>
<td>Introduction to urban sustainability</td>
<td>Activity Introduction to the QGIS geographic information system (GIS) tool</td>
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<td>Differing value systems for urban infrastructure</td>
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<td>Case Studies Masdar City</td>
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<td>Selected Reading Michael Sorkin: Traffic in Democracy</td>
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<tr>
<td></td>
<td>Urban energy use, carbon emissions, and climate change</td>
<td>Activity Introduction to QGIS part 2: Key functions, mapmaking, and relational data</td>
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<td></td>
<td>Case Studies BedZED London</td>
<td>Overview of the City of Toronto Open Data portal</td>
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<td></td>
<td>Selected Reading Mohsen Mostafavi: Excerpts from Ecological Urbanism</td>
<td></td>
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<tr>
<td>25 Jan (Week 3)</td>
<td>Transportation and walkability</td>
<td>Activity Data normalization techniques, point data to density, and data overlays</td>
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<td></td>
<td>Case Studies Masterplan of Milan</td>
<td>Assignment #1 – Visualizing spatial statistics (Out)</td>
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<tr>
<td></td>
<td>Selected Reading Lawrence D. Frank: Land Use and Transportation Interaction – Implications on Public Health and Quality of Life</td>
<td></td>
</tr>
<tr>
<td>Date (Week)</td>
<td>Topic</td>
<td>Activities &amp; Assignments</td>
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</tbody>
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| 1 Feb (Week 4) | Water management Urban greenery | Activity  
GIS review and Q&A session |
| | Case Studies  
Ang Mo Kio-Bishan Park | |
| | Selected Reading  
Singapore PUB: Active, Beautiful, Clean  
Waterways Selected Case Studies | |
| | Zhang, et al.: Conventional and  
Decentralized Urban Stormwater Management: A Comparison Through  
Case Studies of Singapore and Berlin, Germany | |
| 8 Feb (Week 5) | Urban resource utilization Urban metabolism | Activity  
Introduction to Raster Math in GIS  
Visualize the topography of a Toronto neighborhood and compare it to landcover type to assess drainage and flood risk |
| | Case Studies  
Toronto | Assignment  
#1 – Visualizing spatial statistics (Due)  
#2 – Raster GIS analysis (Out) |
| | Selected Reading  
Paulo Ferrão and John Fernandez: Urban Metabolism: Resource Consumption of Cities | |
| 15 Feb (Week 6) | Urban microclimate and public space Urban heat island | Activity  
Visualize raster land surface temperature (LST) data for the Toronto area, and analyze its relationship to Toronto buildings and roads shapefiles. |
| | Case Studies  
Hong Kong, Tokyo, Tucson, Chicago, New York | |
| | Selected Reading  
(None this week.) | |
| 22 Feb | Reading Week, no class. | |
| 1 Mar (Week 7) | Midterm quiz Course project discussion | Activity  
Formation of analysis project groups. |
<table>
<thead>
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<th>Activities &amp; Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>8 Mar</strong> <em>(Week 8)</em></td>
<td>Urban growth and sprawl</td>
<td><strong>Activity</strong> Meeting with project groups</td>
</tr>
<tr>
<td><strong>15 Mar</strong> <em>(Week 9)</em></td>
<td>Urban energy and food production</td>
<td><strong>Activity</strong> Calculating sunlight hours—a simple indicator of environmental performance. Using non-spatial data from the Toronto Open Data portal. <strong>Assignment</strong> #2 – Raster GIS analysis (Due)</td>
</tr>
<tr>
<td><strong>22 Mar</strong> <em>(Week 10)</em></td>
<td>Urban daylighting and ventilation</td>
<td><strong>Activity</strong> Using distance-based measures in estimating urban quality. GIS tips and troubleshooting session. <strong>Assignment</strong> Analysis project part A – Meet either this week or next with Alstan or a TA to discuss your project analysis with at least one map available in draft form.</td>
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<tr>
<td><strong>29 Mar</strong> <em>(Week 11)</em></td>
<td>Measures of urban form towards design metrics</td>
<td><strong>Activity</strong> Meeting with project groups <strong>Assignment</strong> Analysis project part A – Meet either this week if you have not done so with Alstan or a TA to discuss your project analysis with at least one map available in draft form.</td>
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<tr>
<td><strong>5 Apr</strong> <em>(Week 12)</em></td>
<td>Analysis project presentations in 3(+), 1-hour sessions</td>
<td>Final quiz to be scheduled (via Quercus).</td>
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IV EVALUATION/GRADING SCHEME

See the course schedule for homework assignment and midterm quiz timing. Assignments will be due on Fridays at 11:55 pm during the weeks indicated.

The final quiz will be scheduled by FAS.

MARK BREAKDOWN

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Final Marks</th>
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<tbody>
<tr>
<td>Attendance and participation</td>
<td>10%</td>
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<tr>
<td>Homework assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm quiz</td>
<td>20%</td>
</tr>
<tr>
<td>Analysis project</td>
<td>30%</td>
</tr>
<tr>
<td>Final quiz</td>
<td>20%</td>
</tr>
</tbody>
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Note: if an unexpected technical issue occurs with a university system (e.g., Quercus services, network outage) that affects availability or functionality, it may be necessary to revise the timing or weighting of the assessments.

CRITERIA FOR EVALUATING WORK

The primary criteria used in evaluating assignments and the analysis project will be disseminated during the course on a per-assignment basis.

V COURSE POLICIES

- This statement from the university is of utmost importance: “The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another’s differences. U of T does not condone discrimination or harassment against any persons or communities.”

- I will respond to e-mail inquiries within 24 hours on weekdays. I appreciate it if you prepend a tag [ENV307] to the e-mail subject line when writing me about the course. Contact through Quercus is also fine but less preferable.

- Students must watch available recorded practical content on their own time prior to attending synchronous sessions. Online synchronous sessions will be recorded and made available for all students.

- All assignments are due at the specified time and date. Late submission will result in a 10% deduction (of each assignment’s total grade) per day.

- Attendance will be taken using a short Quercus quiz during each class period. If you are not able to attend a synchronous session due to illness or otherwise, please fill out the self-declaration form on ACORN (if appropriate) and let me know as soon as possible. We will not be requiring verification of illness this term.
• Students who for reasons beyond their control are unable to submit an assignment by its deadline must obtain approval from their instructor for an extension within the term.

• All assignment submissions will take place through Quercus.

VI TECHNOLOGY REQUIREMENTS

Specific guidance from the U of T Vice-Provost, Students regarding student technology requirements is available here: https://www.viceprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/

Advice for students more broadly regarding online learning is available here: https://onlinelearning.utoronto.ca/getting-ready-for-online/

This course requires the use of computers, and of course sometimes things can go wrong when using them. You are responsible for ensuring that you maintain regular backup copies of your files, use antivirus software (if using your own computer), and schedule enough time when completing an assignment to allow for delays due to technical difficulties. Computer viruses, crashed hard drives, lost or corrupted files, incompatible file formats, and similar mishaps are common issues when using technology, and are not acceptable grounds for a deadline extension.

VII INSTITUTIONAL POLICIES AND SUPPORT

ACADEMIC INTEGRITY

On Academic Integrity:
The University of Toronto treats cases of academic misconduct very seriously. Academic integrity is a fundamental value of learning and scholarship at the U of T. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that your U of T degree is valued and respected as a true signifier of your individual academic achievement.

The University of Toronto’s Code of Behaviour on Academic Matters outlines the behaviours that constitute academic misconduct, the processes for addressing academic offences, and the penalties that may be imposed. You are expected to be familiar with the contents of this document. Potential offences include, but are not limited to:

In papers and assignments:
• Using someone else’s ideas or words without appropriate acknowledgement.
• Submitting your own work in more than one course without the permission of the instructor.
• Making up sources or facts.
• Obtaining or providing unauthorized assistance on any assignment (this includes working in groups on assignments that are supposed to be individual work).
On tests and exams:
- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else’s answers.
- Letting someone else look at your answers.
- Misrepresenting your identity.
- Submitting an altered test for re-grading.

Misrepresentation:
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor’s notes.
- Falsifying institutional documents or grades.

All suspected cases of academic dishonesty will be investigated following the procedures outlined in the Code of Behaviour on Academic Matters. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me. If you have questions about appropriate research and citation methods, you are expected to seek out additional information from me or other available campus resources like the College Writing Centres, the Academic Success Centre, or the U of T Writing Website.

COPYRIGHT
All lecture materials will be posted online through Quercus (recordings of lectures, copies of lecture slides, recorded synchronous meeting sessions, and lecture notes). If a student wishes to copy or reproduce any of this material for their own use, that is fine. Reproduction of course content online outside of Quercus is an infringement of copyright and is absolutely prohibited.

ACCESSIBILITY NEEDS
Students with diverse learning styles and needs are welcome in this course. The University of Toronto is committed to accessibility: if you require accommodations for a disability, or have any other accessibility concerns about the course, please contact Accessibility Services as soon as possible.

ADDITIONAL SERVICES and SUPPORT
The following are some important links to help you with academic and/or technical service and support

- General student services and resources at Student Life
- Full library service through University of Toronto Libraries
- Resources on conducting online research through University Libraries Research
- Resources on academic support from the Academic Success Centre
- Learner support at the Writing Centre
- Information for Technical Support/Quercus Support