I  CONTACTS

INSTRUCTOR
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II  Course Overview

LOCATIONS:
Course lecture session, practical sessions, and office hours will be conducted via scheduled, recurring Zoom meetings.

MEETING TIMES:
- Lecture (all students)
  Tuesdays 1200 – 1400

- PRA0101/9101 – GIS Session
  Tuesdays 1400 – 1530

- PRA0201/9201 – GIS Session
  Tuesdays 1530 – 1700

OFFICE HOURS:
Alstan’s Office Hours:
DA 321 (1 Spadina Cres)
- Thursdays 1400 – 1500
- Or by appointment

Maria’s Office Hours
(TBD)

Mehria’s Office 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 (PRA0101/9101 or PRA0201/9201).

There are three 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 neighborhood or area of 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 will be recorded for asynchronous consumption later. The practical sessions (PRA0101/0201/9101/9201) 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. You should be prepared for this session by watching the asynchronous practical video ahead of time!

Participation in the course requires the submission of three 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 fill out the self-declaration form on ACORN (if appropriate) and let me know as soon as possible.
<table>
<thead>
<tr>
<th>Date (Week)</th>
<th>Topic</th>
<th>Activities &amp; Assignments</th>
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</thead>
<tbody>
<tr>
<td>12 Jan (Week 1)</td>
<td>Introduction to urban sustainability Differing value systems for urban infrastructure</td>
<td>Activity Introduction to the QGIS geographic information system (GIS) tool</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>19 Jan (Week 2)</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>Case Studies BedZED London</td>
<td>Overview of the City of Toronto Open Data portal</td>
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<td>Selected Reading Mohsen Mostafavi: Excerpts from Ecological Urbanism</td>
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<tr>
<td>26 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>Case Studies Masterplan of Milan</td>
<td>Assignment #1 – Visualizing spatial statistics (Out)</td>
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<td>Selected Reading Lawrence D. Frank: Land Use and Transportation Interaction – Implications on Public Health and Quality of Life</td>
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<tr>
<td>2 Feb (Week 4)</td>
<td>Water management Urban greenery</td>
<td>Activity GIS review and Q&amp;A session</td>
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<td>Case Studies Ang Mo Kio-Bishan Park</td>
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<td>Selected Reading Singapore PUB: Active, Beautiful, Clean Waterways Selected Case Studies</td>
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<td>Zhang, et al.: Conventional and Decentralized Urban Stormwater Management: A Comparison Through Case Studies of Singapore and Berlin, Germany</td>
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<td>Topic</td>
<td>Activities &amp; Assignments</td>
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<tr>
<td>9 Feb (Week 5)</td>
<td>Urban resource utilization Urban metabolism</td>
<td><strong>Activity</strong> Introduction to Raster Math in GIS</td>
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<td><strong>Assignment</strong> Visualize the location and quantity of flooding reports in Toronto, and relate the data to landcover type, urban density, and economic indicators</td>
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<td><strong>Case Studies</strong> Toronto</td>
<td><strong>Assignment</strong> #1 – Visualizing spatial statistics (Due)</td>
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<td></td>
<td><strong>Selected Reading</strong> Paolo Ferrão and John Fernandez: Urban Metabolism: Resource Consumption of Cities</td>
<td><strong>Assignment</strong> #2 – Raster GIS analysis (Out)</td>
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<tr>
<td>16 Feb</td>
<td><strong>Reading Week, no class.</strong></td>
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<tr>
<td>23 Feb (Week 6)</td>
<td>Urban microclimate and public space Urban heat island</td>
<td><strong>Activity</strong> Visualize raster land surface temperature (LST) data for the Toronto area, and analyze its relationship to Toronto buildings and roads shapefiles.</td>
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<td><strong>Case Studies</strong> Hong Kong, Tokyo, Tucson, Chicago, New York</td>
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<td><strong>Selected Reading</strong> (None this week.)</td>
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<td>2 Mar (Week 7)</td>
<td>Midterm quiz Course project discussion</td>
<td><strong>Activity</strong> Formation of analysis project groups.</td>
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<td>9 Mar (Week 8)</td>
<td>Urban growth and sprawl</td>
<td><strong>Activity</strong> Meeting with project groups</td>
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<td><strong>Case Studies</strong> Atlanta</td>
<td><strong>Assignment</strong> #2 – Raster GIS analysis (Due)</td>
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<td><strong>Selected Reading</strong> Bruegmann: Excerpts from Sprawl, a Compact History</td>
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<tr>
<td>Date (Week)</td>
<td>Topic</td>
<td>Activities &amp; Assignments</td>
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</tbody>
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| 16 Mar (Week 9) | Urban energy and food production  
Case Studies  
Cambridge, MA, USA  
Selected Reading  
Carlisle and Bush: Moving to Renewable Communities | Activity  
Calculating sunlight hours—a simple indicator of environmental performance. Using non-spatial data from the Toronto Open Data portal.  
Assignment  
#3 – Geometric-based GIS calculations (Out) |
| 23 Mar (Week 10) | Urban daylighting and ventilation  
Case Studies  
(None this week)  
Selected Reading  
Andersen and Sattrup: The Urban Canyon and Building Energy Use-Urban Density Versus Daylight and Passive Solar Gains | Activity  
Using distance-based measures in estimating urban quality. GIS tips and troubleshooting session.  
#3 – Geometric-based GIS calculations (Due) |
| 30 Mar (Week 11) | Measures of urban form towards design metrics  
Case Studies  
Toronto  
Selected Reading  
(None this week) | Activity  
Meeting with project groups |
| 6 Apr (Week 12) | Analysis project presentations in 3, 1-hour sessions | Final exam to be scheduled. |
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>30%</td>
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<tr>
<td>Midterm quiz</td>
<td>20%</td>
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<tr>
<td>Analysis project</td>
<td>20%</td>
</tr>
<tr>
<td>Final exam</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/technology-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, broken printers, 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:
Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student’s individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto’s Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:
1. Using someone else’s ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:
1. Using or possessing unauthorized aids.
2. Looking at someone else’s answers during an exam or test.
3. Misrepresenting your identity.

In academic work:
1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required by the University.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see https://www.academicintegrity.utoronto.ca/).

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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