ENV 307H Urban Sustainability
Winter 2020

Time:

- Lecture (all students)
  Tuesdays 1200 – 1400
  Location: HS 106 (Health Sciences Building)
- PRA0101 – Computer Lab Session
  Tuesdays 1400 – 1530
  Location: RW 107 (Ramsay Wright Laboratories)
- PRA0201 – Computer Lab Session
  Tuesdays 1530 – 1700
  Location: RW 107 (Ramsay Wright Laboratories)

Instructor J. Alstan Jakubiec
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TA María Toledo-Garibaldi
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Office Hours
Alstan's Office Hours:
DA 321 (1 Spadina Cres)
- Tuesdays 1000 – 1200
- Or by appointment

Maria'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 computer lab sessions (PRA0101 or PRA0201).

There will be three homework assignments given focused on applying the GIS software learned in class, midterm and final quizzes, 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.

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 low-carbon, high-livability urban developments based upon novel analysis (group analysis project).

Evaluation Scheme

Attendance	10% of final marks
Homework assignments	30% of final marks
Midterm quiz	20% of final marks
Analysis project	20% of final marks
Final exam	20% of final marks

Weekly Course Schedule (1 – 4)

Date (Week)	**Topic**	**Activities & Assignments**
(Week 1)	Introduction to urban sustainability Differing value systems for urban infrastructure Case Studies Masdar City Selected Reading Michael Sorkin: Traffic in Democracy	Activity Introduction to the QGIS geographic information system (GIS) tool
(Week 2)	Urban energy use, carbon emissions, and climate change Case Studies BedZED London Selected Reading Mohsen Mostafavi: Excerpts from Ecological Urbanism	Activity Introduction to QGIS part 2: Key functions, mapmaking, and relational data Overview of the City of Toronto Open Data portal
(Week 3)	Transportation and walkability Case Studies Masterplan of Milan Selected Reading Lawrence D. Frank: Land Use and Transportation Interaction – Implications on Public Health and Quality of Life	Activity Data normalization techniques, point data to density, and data overlays Assignment #1 – Visualizing spatial statistics (Out)
(Week 4)	Water management Urban greenery 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	Activity GIS review and Q&A session

Weekly Course Schedule (5 – 8)

Date (Week)	Topic	Activities & Assignments
(Week 5)	Urban resource utilization Urban metabolism Case Studies Toronto Selected Reading Paulo Ferrão and John Fernandez: Urban Metabolism: Resource Consumption of Cities	Activity Introduction to Raster Math in GIS Visualize the location and quantity of flooding reports in Toronto, and relate the data to landcover type, urban density, and economic indicators Assignment #1 – Visualizing spatial statistics (Due) #2 – Raster GIS analysis (Out)
(Week 6)	Urban microclimate and public space Urban heat island Case Studies Hong Kong, Tokyo, Tucson, Chicago, New York Selected Reading Timothy Richard Oke: Urban Heat Island Excerpts	Activity Visualize raster land surface temperature (LST) data for the Toronto area, and analyze its relationship to Toronto buildings and roads shapefiles.
(Reading Week)		
(Week 7)	Midterm quiz Course project discussion	Activity Formation of analysis project groups.
(Week 8)	Urban growth and sprawl Case Studies Atlanta Selected Reading Bruegmann: Excerpts from Sprawl, a Compact History	Activity Meeting with project groups Assignment #2 – Raster GIS analysis (Due)

Weekly Course Schedule (9 – 12)

Date (Week)	Topic	Activities & Assignments
(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)
(Week 10)	Design for 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)
(Week 11)	Measures of urban form towards design metrics Case Studies Toronto Selected Reading (None this week)	Activity Meeting with project groups
(Week 12)	Analysis project presentations in 3, 1-hour sessions	
	Final exam to be scheduled.	

Late Work

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. In the case of illness or other special circumstance, notification should be given to the Instructors and the Registrar as soon as possible and before the deadline in question; where required, the official University of Toronto Verification of Student Illness or Injury form must be submitted. Additional information is available on the Verification of Illness or Injury is available online: http://www.illnessverification.utoronto.ca/Frequently-Asked-Questions.php

Final Due Date

Due dates are set by the Instructor in the schedule and evaluation sections of this outline. All term work must be submitted on or before the deadline date stipulated by the instructor. 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. The last date of the term is April 25, 2020. Any work submitted after the stipulated deadline and before the end of term without an approved extension will not be accepted. Students will be required to petition for an extension if they will be unable to submit their work by April 25, 2020. http://www.sgs.utoronto.ca/Documents/Extension+to+Complete+Coursework.pdf

Students are advised to contact their professors in advance of a deadline, where possible. Those students registered with Accessibility services should provide you with a letter from their advisor that confirms their registration and indicates their required accommodations.

Preparedness at UofT

Students are advised to register for UTAlert, the University's alert system, at http://alert.utoronto.ca/. UTAlert sends important messages to registrants via text, email, and phone.

Accessibility Needs

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs.

If you are a student who identifies with one or more of the broad categories below, we encourage you to register with Accessibility Services (http://www.accessibility.utoronto.ca/). New student registration packages need to be submitted by February 7, 2020 in order to receive Exam accommodations. For any questions or assistance, please see the staff in the Office of the Registrar and Student Services.

- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism Spectrum Disorder
- Brain Injury and Concussion
- Chronic Health
- Deaf and Hard of Hearing
- Learning Disability
- Mental Health
- Mobility and Functional
- Low Vision / Legally Blind
- Temporary Injuries

English Language and Writing Support

The University of Toronto expects its students to write well, and it provides a number of resources to help. Please consult the University of Toronto writing site (http://www.writing.utoronto.ca/) for advice and answers to your questions about writing. Please pay special attention to "Advice on Writing: Academic Writing."

Academic writing carries with it certain expectations about properly citing, quoting, and referencing source material. Your research must be conveyed in a language commonly shared by others in the discipline. The style guidelines preferred by the Daniels Faculty are put forth in the Chicago Manual of Style and can be found here:
http://www.chicagomanualofstyle.org/16/contents.html
https://owl.english.purdue.edu/owl/resource/717/01/

The Centre for International Experience (CIE) English Language Support is also available to support students:
https://www.studentlife.utoronto.ca/cie/els

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 (www.governingcouncil.utoronto.ca/policies/behaveac.htm) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. The Code of Behavior on Academic Matters states: "It shall be an offence for a student knowingly […] to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e, to commit plagiarism." The Code also states: "Wherever in the Code an offence is described as depending on 'knowing,' the offence shall likewise be deemed to have been committed if the person ought reasonably to have known."

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, including (but not limited to) doctor's notes.

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. For information about academic integrity at the University of Toronto, please see www.academicintegrity.utoronto.ca

Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

For accepted methods of standard documentation formats, including electronic citation of internet sources please see the U of T writing website at: http://www.writing.utoronto.ca/advice/using-sources/documentation. Please also refer to "Reading and Using Sources: How Not to Plagiarize" on the University of Toronto writing site (http://www.writing.utoronto.ca/).