

**Western University - Faculty of Engineering
Department of Civil and Environmental Engineering**

CEE 4485a/b – Cities: Resilience and Sustainability - Course Outline 2018/19

Objectives:

Cities are complex dynamical systems, which pose extraordinary challenges to the humanity in the future. Therefore, more and more cities are committed to promote, elaborate and put into action strategies to increase urban resilience and sustainability consistent with the economic costs to provide urban quality and therefore to raise quality of life standards. This interdisciplinary course focuses on “urban sustainability” and “urban resilience”. Historically the sustainability science and resilience theory have been developed separately, though occasionally the terms have been used interchangeably. In this course, we discuss whether resilience and sustainability should be combined.

Topics

1. City, a complex human and natural system
2. Urban sustainability
3. Urban resilience
4. A complementary approach

Calendar Copy:

A first course in Urban Physics focused on urban resilience and urban sustainability. The relation/opposition of these two notions are discussed.

Contact Hours:

3 lecture hours/week

Prerequisites: no prerequisite

Corequisites: None

Antirequisite: None

Note: It is the **student's responsibility** to ensure that all Prerequisite and Corequisite conditions are met or that special permission to waive these requirements has been granted by the Faculty. It is also the **student's responsibility** to ensure that they have not taken a course listed as an Antirequisite. The student may be dropped from the course or not given credit for the course towards their degree if they violate the Prerequisite, Corequisite or Antirequisite conditions.

Instructor:

Dr. Hassan Peerhossaini, hpeerhos@uwo.ca

Administrative Support: Room 3005

Course materials:

There is no textbook for the course; various papers in the scientific, engineering and social science literature will be used. The course material is cumulative, therefore you should review lectures and readings weekly - do not expect success if you only study and practice before exams.

A non-exhaustive sample of suggested readings for the course is listed below:

Chapin, F. S., G. P. Kofinas, and C. Folke, editors. 2009.

Principles of ecosystem stewardship: resilience-based natural resource management in a changing world.

Springer, New York,
New York, USA.

Bruntland, G. H. 1987.

Our common future: report of the 1987

World Commission on Environment and Development. Oxford
University Press, Oxford, UK.

Morphological and climate balance: Proposal for a method to analyze neighborhood urban forms
by way of densification

Martina Pacificia et al.

Sustainable Cities & Society 35 (2017) 145-156

Resilience thinking: integrating resilience, adaptability and transformability.

Folke, C., S. R. et al.

Ecology and Society 15(4)-2010:20.

Urban policies and sustainable energy management

Fabrizio Cumo, et al.

Sustainable Cities & Society 4 (2014) 29-34

Prospects for transdisciplinarity

Julie Thompson Klein _

Futures 36 (2004) 515-526

On the use of numerical modelling for near-field pollutant dispersion
in urban environments _ A review

M. Lateb et al.

Environmental Pollution 208 (2016) 271e283

Sustainable and Smart Cities

M.E. Khan

The World Bank

Sustainable Development Network

Urban and Disaster Risk Management Department

May 2014

Tipping Toward Sustainability: Emerging Pathways of Transformation
Frances Westley, et al.
AMBIO (2011) 40:762–780

Clarifying the new interpretations of the concept of sustainable building
Umberto Berardi
Sustainable Cities & Society 8 (2013) 72-78

Should sustainability and resilience be combined or remain distinct pursuits?
Charles L. Redman
Ecology and Society 19(2)-2014: 37

Agency, capacity, and resilience to environmental change: lessons from human development, well-being, and disasters.
Brown, K., and E. Westaway
Annual Review of Environment and Resources 36 (2011) 321-342.

Cooper, J., and P. Sheets, eds. 2012.
Surviving sudden environmental change: answers from archaeology.
University Press of Colorado, Boulder, Colorado, USA.

Units:

SI units will be used in lectures and examinations

Specific Learning Objectives:

1. At the end of topic 1 (City, a complex system of human and natural system), the student should be able to define “city” as a complex system with its principal parameters and the interaction between human and its natural environment.
2. At the end of topic 2 (Urban sustainability), the student should know the notion of sustainability and can give some examples in the context of “city”.
3. At the end of topic 3 (Urban resilience), the student should know the notion of urban resilience and can give some examples in the context of “city”.
4. At the end of topic 4 (A complementary approach), the student should be able to point out contradictions between sustainability and resilience and the ways that these two notions could be (or not) reconciled.

Evaluation:

The final course mark will be determined as follows:

Assignments	40%
Project (formal final report and oral presentation)	50%
Participation	10%

Total	100%

Each student is required to attend all the lectures. Attendance may be taken randomly during any lecture. Marks will be awarded based on one's attendance and level of active participation in discussions and activities during lectures. Positive attitude, attentiveness and active listening can also enhance your mark. The instructor and TAs will jointly decide on each student's final participation mark.

Students will complete a research project as a focal point of the course. They may work in small groups for some stages of the research process but each student will write up her/his own report to be submitted individually. Each project will be orally presented in public. More details about the research project will be provided early in the semester.

Note:

(a) Students who have failed this course previously must repeat all components of the course.

No special permissions will be granted enabling a student to retain laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted.

(b) Should the oral presentation conflict with a religious holiday that a student wishes to observe, the student must inform the instructor of the conflict no later than two weeks before the scheduled presentation.

(For further information on Accommodations for Religious Holidays see

http://www.uwo.ca/univsec/handbook/appeals/accommodation_religious.pdf)

1. Weekly Assignments

Each group must turn in a progress report of each assignment every two weeks. Group membership will be assigned by the instructor, and will be revised at least once during the term. All group members must sign the cover page of group submissions. The instructor will designate the group member responsible for preparing each group submission.

Each assignment will have a due date and should be handed in to your TA. An assignment loses 10% of its total possible value for each day late. Assignments more than 5 days late will not be accepted. Medical and compassionate grounds, accomplished by suitable documentation, may be accepted as justification for late assignment submission.

2. Use of English

In accordance with Senate and Faculty Policy, students may be penalised up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Plagiarism Checking:

The University of Western Ontario uses software for plagiarism checking. Students are required to submit their Laboratory Reports in electronic form to Turnitin.com for plagiarism checking.

Cheating:

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning.

For more information on scholastic offenses, please see:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Attendance:

Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.uwo.ca/univsec/board/code.pdf>

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see attached). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

Students that are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help

For more information concerning medical accommodations, please see:

http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf

Notice:

Students are responsible for regularly checking their email, course website (<https://owl.uwo.ca>) and notices posted outside the Civil and Environmental Engineering Department Office

Consultation:

Students are encouraged to discuss problems with their teaching assistant and/or instructor in tutorial sessions. Office hours will be arranged for the students to see the instructor and teaching assistants. Other individual consultation can be arranged by appointment with the appropriate instructor.

Course Breakdown

Complimentary Studies = 100%