

## **CEM 441: Urban Sustainability Course Syllabus**

Urban sustainability is a relatively new and evolving area of academic study and professional practice in Canada and many other countries worldwide. Over the past decade or so, recognition has grown that, in order to achieve meaningful progress towards the goal of global sustainability, it is vital that our cities and other urban areas become much more sustainable than at present. The importance of urban sustainability is further underscored by global demographic trends. Currently, 54% of the world's population resides in urban areas and this percentage is projected to steadily increase over the coming decades. Moreover, the environmental impacts of urban areas in many parts of the world, which are substantial and far-reaching, provide compelling reason to transition towards more sustainable forms of urban development. It is well-established that urban areas typically have substantial ecological footprints and, in the case of large cities, the associated footprints can be several hundred times greater than their actual land bases, representing local, regional and global impacts.

From an environmental standpoint, cities have been generally viewed as a problem due to their high consumption of natural resources, generation of pollutants and other waste by-products, and other types of impact, yet more recent thinking regards urban areas as major opportunities for innovative approaches and solutions. Moreover, within the field of urban sustainability, the thinking has crystalized to a point that there are now widely-accepted core principles, a range of approaches and strategies available to enable urban areas to shift towards sustainability, and promising practices to draw from in terms of working towards feasible solutions.

This online course aims to provide students from a wide variety of academic and professional backgrounds with an in-depth understanding of urban sustainability in theory and practice. Course content is based on a broad range of academic and non-academic sources, featuring examples and case studies from a North American and global context.

### **Course Readings**

There are no required hard copy textbooks in the course; instead, we will use several electronic books available through the University of Toronto library website. For free access to these and other electronic sources, please go to the University of Toronto's library website at <http://oneresearch.library.utoronto.ca/>. If you access these sources from off-campus, you will be prompted to log in with your UTORid for user verification.

Other course reading material, including academic journal articles and reports and other documents from various government bodies and non-government organizations, will be posted in PDF format or available via electronic links provided on the course website. You can download a version of the free Adobe Reader at: <http://get.adobe.com/reader/>. In general, it is recommended to have all course readings completed during the week that they are assigned. We will have two reading weeks during the course, which will be an opportunity for anyone who might need to get caught up on the readings or else to read ahead.

### **Course Objectives**

The overarching goal of the course is to provide an understanding of urban sustainability at different scales, from a single street or neighbourhood to city-wide, and its implementation in

Canadian as well as international contexts. Through online course materials, weekly readings, online discussions and written assignments, students will become familiar with the concept of a sustainable city and what it entails, important dimensions of urban sustainability, and multiple avenues for enabling the transition towards urban sustainability. The course will feature numerous examples and case studies of urban areas from North America, Europe, Australia, China, South America and other parts of the world. By the end of the course, students will:

- Understand the concept of a sustainable city and its key ideas and principles
- Be familiar with the global urbanization shift and trends in different parts of the world
- Appreciate how cities typically impact on different components of the planet, including land, water, air and biodiversity, and at different scales, from local to global
- Know conceptual models related to urban sustainability, including the Urban Ecological Footprint, Urban Environmental Transition and Urban Metabolism models
- Make connections between salient features of urban areas, such as urban form, transportation, water management, green space and biodiversity, waste management, and energy use and climate change, and their associated environment impacts at local to global scales
- Understand the range of opportunities for urban areas to shift from unsustainable to more sustainable by means of changes in thinking, policy, design, management, and innovative approaches and strategies
- Be familiar with city-scale, urban sustainability planning approaches
- Appreciate the importance of partnership approaches and local initiatives in the transition towards urban sustainability
- Be aware of examples of cities that are leaders in urban sustainability, such as Curitiba, Stockholm, Copenhagen, Melbourne and Vancouver
- Also understand the obstacles and challenges involved in shifting to a sustainable city

### **Assignments and Grading Scheme**

The grade you obtain from this course will depend on your research and writing skills, critical thinking ability, and participation in the discussion forums. There are three short papers and one final long paper due in the final week. In addition, it is essential to participate actively in the weekly discussion forums. The course grading scheme is as follows:

Three short papers (end of Week 3, end of Week 5, end of Week 7; 10% for each paper) - 30%

Participation in weekly discussion forums (throughout course) - 35%

Final long paper (end of Week 10) - 30%

The short papers will be based on the course readings and additional research, and will allow students to synthesize materials in a critical and succinct manner. These papers will average 1000 words each. The longer paper will be a research paper based on a topic of your choosing (2500-3000 words). The purpose of the assignments is for you to utilize your writing and critical thinking skills, and to explore the content of the course in a formal manner. Detailed instructions for the short and long papers will be made available once the course has started.

### **Overall assessment**

This program requires that students achieve a grade of 70% (B-) or higher in order to pass the course. A high level of quality is expected in the work produced by students. For evaluation purposes, work will be graded based on the following criteria:

**For an A+ grade (90%+):** Exceptional performance: creative and original thinking; excellent organization, capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.

**For an A- (80-84%) to A (85-89%) grade:** Strong performance: solid evidence of original thinking; good organization, capacity to analyze and synthesize; good grasp of subject matter with sound critical evaluations; evidence of broad knowledge base.

**For a B (73-75%) to B+ (76-79%) grade:** Good performance: evidence that the subject matter has been grasped; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.

**For a B- grade (70-72%):** Intellectually adequate performance: student who is profiting from her or his educational experience; understanding of the subject matter and ability to develop solutions to simple problems in the material.

### Student Obligations

a) Students are expected to participate "in class" every week with a **minimum** of twice weekly participation in the discussion forum. Participation counts for 35% of your overall mark and will be based on regular contributions to the weekly discussion forums, so do participate regularly. A rubric on the measure of quantity and quality of your participation in the discussion forum will be used for evaluation, as shown below:

|  |   |  |  |  |
|--|---|--|--|--|
| Promptness and Initiative              | Does not respond to most postings; rarely participates freely                                 | Responds to most postings several days after initial discussion; limited initiative                        | Responds to most postings within a 24 hour period; requires occasional prompting to post                                     | Consistently responds to postings in less than 24 hours; demonstrates good self-initiative                               |
| Delivery of Post                       | Utilizes poor spelling and grammar in most posts; posts appear "hasty"                        | Errors in spelling and grammar evidenced in several posts  | Few grammatical or spelling errors are noted in posts  | Consistently uses grammatically correct posts with rare misspellings   |
| Relevance of Post                      | Posts topics which do not relate to the discussion content; makes short or irrelevant remarks | Occasionally posts off topic; most posts are short in length and offer no further insight into the topic   | Frequently posts topics that are related to discussion content; prompts further discussion of topic                          | Consistently posts topics related to discussion topic; cites additional references related to topic                      |
| Expression Within the Post             | Does not express opinions or ideas clearly; no connection to topic                            | Unclear connection to topic evidenced in minimal expression of opinions or ideas                           | Opinions and ideas are stated clearly with occasional lack of connection to topic  | Expresses opinions and ideas in a clear and concise manner with obvious connection to topic                              |
| Contribution to the Learning Community | Does not make effort to participate in learning community as it develops; seems indifferent   | Occasionally makes meaningful reflection on group's efforts; marginal effort to become involved with group | Frequently attempts to direct the discussion and to present relevant viewpoints for consideration by group; interacts freely | Aware of needs of community; frequently attempts to motivate the group discussion; presents creative approaches to topic |

For the weekly discussion forums, the basic expectation in the course is a minimum of two substantive posts per week (each post being 200+ words). Posts can include your own ideas and thoughts on the weekly topic and related course material, as well as responses to the posts of others in the class. Please be aware that, as noted in the rubric above regarding promptness and initiative, *when* you make your posts is important; posts made earlier in the week count more in the grading scheme than those made at the end of the week, for the reason that the early posts represent more of a contribution to the class discussion. Don't leave your posts to the last minute!

b) Students are expected to meet deadlines for written assignments. The assignments will have specific due dates. If you are unable to meet one of the deadlines (for a legitimate reason such as illness), please e-mail the course instructor in advance of the deadline. If you do NOT notify the instructor regarding your late assignment in advance, your paper will still be accepted, but a late penalty of 5% per day will apply. Assignments will not be accepted beyond one week past the due date, unless the student has obtained prior permission from the instructor.

c) Students are advised to check the Announcements page on the course website every few days for any new announcements posted and to also check their utoronto e-mail accounts regularly for course-related information and weekly updates sent by the course instructor.

### **Discussion Forum Etiquette**

In discussion forums, remember to *think, discuss, and debate* from a multitude of perspectives. Both the instructor and the student will use language that is scholarly and professional.

Express yourself *clearly, accurately, and in an intellectual* rather than in a personal fashion. Discussion forums are designed for you to ask questions and gain further knowledge. Remember to reason intelligently with the instructor and other students. As the study of environmental management is a broad field and is continually evolving, please feel free to give your view or interpretation based on your own experiences.

Develop *awareness* of your own ethnocentrism and make conscious efforts to ameliorate it. Keep in mind that the course materials will come from a wide cross-section of fields of study and may use jargon that is not familiar to you. Seek to understand the subtleties of these new terms to gain a deeper understanding of the material being presented. Please ask about concepts or terms that you do not understand.

Remember, if you have a question, it is likely someone else has the same question. Also, be conscious of the language you use when you speak about race, ethnicity, and gender. Please be careful also to avoid any bigoted or exclusive language.

Students who express themselves *inappropriately* or attack others personally in the discussion forums will lose their points for participation, and possibly their privilege to continue in the course. Most students are very considerate and respectful of others, but once in a while, someone acts inappropriately which can detract from the experience of others.

### **WEEKLY MODULE SCHEDULE**

#### **MODULE 1 – Introduction to Urban Sustainability**

The introductory module will enable students to get to know one another and become familiar with the online format of the course. The module content will examine the concept of urban

sustainability and its core ideas and principles, as well as the critique of the concept. In addition, we will consider the adverse environmental impacts of urban areas as both the underlying problem and opportunity for solutions. Furthermore, we will take a look at a number of interesting examples of urban areas that are transitioning towards a sustainable city, including the internationally renowned city of Curitiba (Brazil).

### **MODULE 2 – Global Urbanization Trends and Environmental Impacts**

In Module 2, we review the global urbanization transition that is currently underway and key urbanization trends in different parts of the world in order to provide a foundation for the upcoming modules. Module material also covers the topic of urban environmental impacts broadly, distinguishing between natural and anthropogenic causes and outlining the range of impacts on land, water, air and biodiversity, at local to global scales. The module also reviews several useful conceptual models: the urban ecological footprint, urban environmental transition, and urban metabolism. Module readings include a case study of Vancouver.

### **MODULE 3 – Urban Form**

In Modules 3 to 8, we will focus on different features or dimensions of the urban environment, beginning with urban form, which has many implications for sustainability. Module content looks at urban form in terms of the size of urban areas, population density, and the aspect of compactness vs. sprawl. The environmental and social implications of urban sprawl and compact city form are further examined. Lastly, we consider Smart Growth as a strategy to promote urban sustainability and take a look at the example of Portland, Oregon.

***Short paper 1 due at end of Week 3***

### **FIRST READING WEEK – No new material or discussion forum this week**

### **MODULE 4 – Urban Transportation**

This week, we examine the conventional approach to transportation planning in urban areas, which has traditionally privileged the car. We then turn our attention to an alternate model of urban transportation known as the green transportation hierarchy. Module content covers public transit and transit-oriented development, as well strategies to encourage active transportation modes such as cycling and walking. One of the readings for this week investigates strategies to promote cycling in Beijing, Berlin, Canberra and Singapore.

### **MODULE 5 – Urban Water Management**

In Module 5, we begin with a review of the water cycle and the various ways in which the cycle is commonly altered in urban areas. Module material also covers conventional, large-scale urban water systems and their benefits as well as limitations. We then shift to sustainable approaches for managing water in the urban environment, including demand management and sustainable approaches to stormwater runoff. The module ends with a look at “lost rivers” and the example of a restored river in Seoul, Korea.

***Short paper 2 due at end of Week 5***

### **MODULE 6 – Green Space and Biodiversity**

This week we turn to another important dimension of urban areas, namely, green space and biodiversity. Module content includes the variety of green spaces in cities and their many benefits, the importance of making green spaces accessible to urban dwellers, the nature of biodiversity in

urban areas, and strategies to maintain or enhance green space and urban biodiversity. We will also look at urban agriculture as a form of green space. Examples from this module include Montreal, Toronto and New York City.

### **MODULE 7 – Urban Waste Management**

In Module 7, we focus on waste management in urban settings, in particular, municipal solid waste. We consider how cultural values, economic development and other factors affect waste generation and also examine the environmental impacts of disposal of solid wastes in landfills or incineration facilities. The 4 R's framework (reduce, reuse, recycle and recover) is introduced as a more sustainable approach to waste management, as well as the zero waste approach. Module material contains examples from Canada, including Durham Region and Markham (Ontario), and international cases such as San Francisco.

***Short paper 3 due at end of Week 7***

### **SECOND READING WEEK – No new material or discussion forum**

### **MODULE 8 – Energy Use and Climate Change**

This week, we examine two other key dimensions of the urban environment, which are energy use and climate change. The module begins with an overview of patterns of energy consumption in cities worldwide, including the reliance on fossil fuel-based sources. Energy conservation and efficiency are then explored, followed by the topic of renewable energy sources in urban areas. The second part of the module focuses on the issue of climate change and its implications for cities, as well as the scope to address the issue via mitigation and adaptation strategies. A number of examples are presented, including Freiburg (Germany), Caofeidian International Eco-City (China), Toronto, and Stockholm.

### **MODULE 9 – Transitioning Towards Urban Sustainability – Part I**

In the final part of the course, in Modules 9 and 10, we shift our attention to possible avenues that can enable cities to transition from unsustainable towards urban sustainability. Module material looks at urban sustainability as both goal and process. The Melbourne Principles, an internationally ratified set of principles pertaining to urban sustainability, are reviewed. The role of local governments and city-wide sustainability planning are examined, including the example of Vancouver's Greenest City 2020 Action Plan.

### **MODULE 10 – Transitioning Towards Urban Sustainability – Part II**

In this final module, we continue our review of the routes or processes to shift towards urban sustainability, in particular, partnership approaches and community-level initiatives led by local residents, NGOs, universities, companies, and other stakeholders. The module will feature examples from Toronto, Montreal, and Australian cities. This module will also include a wrap-up and opportunity to reflect on the course content.

***Final paper due at end of Week 10***