

UP 136 | Urban Sustainability | Spring 2017

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Temple Hoyne Buell Hall, Room 225. Tues & Thurs 11:00am-12:20pm

Office Hours: Tues 10:00-11:00am Temple Buell Hall, Room M216

Course Description

The world is an increasingly urban place and so what happens in cities – how they operate and change over time – takes on a growing urgency for the sustainability of life on earth. Already, more than half of the world’s population lives in cities and it is estimated that an additional 75 million people will be added to urban areas each year. As a result, the direction that cities take – how they accommodate this growth and manage existing settlements – is a critical factor in achieving global sustainability. Cities are both beacons of opportunity and advancement for much of the world’s population, and the drivers of unsustainable lifestyles and practices that are depleting resources and degrading natural systems. For over a century, urban planning and other modern academic disciplines have provided decision-makers the tools to eliminate or very dramatically reduce the threat of communicable disease, fire, and industrial contamination that plagued early industrial cities. Today, urban populations are larger, healthier, more mobile, and better connected to the global economy than ever before. Our industrial food system delivers affordable nutrition thousands of miles from its source. Energy extraction regimes are developing ever-more efficient ways to harness and deliver energy resources from miles beneath the earth’s surface. These triumphs are predicated on highly specialized knowledge and humanity’s ability to manipulate natural processes. It has become increasingly evident, however, that this manipulation threatens the global systems of which we are an inextricable part. Global climate change, energy and resource scarcity, the decline of life-supporting ecosystems, and the growing disparity between wealthy and poor communities are as much the result of modern human successes as they are a major contributor to current and future community devastation. Increasingly, urban and regional planners will have to confront these contradictions and address issues that are rooted in activities far away in space (across the globe) and time (decades or centuries ago). **How can we create healthy, safe, resilient and inclusive communities without compromising the ecosystems upon which all life depends? What can planners and policy makers do to realize a high quality of life in our cities without further damaging the earth’s ecosystems or consuming resources at an unsustainable rate?**

This course will explore ways we can begin to resolve these global, regional and local issues of unsustainable development priorities by better understanding how and where we chose to live. The course consists of four units that will start with the basics of the sustainable development challenges facing urban areas and then move through three scales at which planners engage with these issues: the regional or metropolitan scale, the neighborhood or community scale, and the individual household scale.

Unit I – Global Sustainability Issues and Debates

In **unit one**, we will start by looking at global development trends driving concerns about urban sustainability – unsustainable consumption, planetary boundaries and the basic science of climate change. We will examine how human settlements have changed throughout time, and how more recent human activity has compromised global ecosystems. We will discover that *where* and *how* humanity has chosen to live has resulted in grave conflicts between human and non-human life as well as amongst different human communities. These conflicts (i.e. the tensions between our energy production systems and rapidly changing global climate) have begun to force us to reconsider where and how we live while adapting to new environmental realities.

Many of these conflicts are the result of **specific human decisions** that can be reversed and re-considered. In the remainder of the course, we will learn about these decisions taken at various urban scales, and alternatives that allow cities and their inhabitants to meet basic needs without further damaging the ecosystems upon which we depend. We will also learn the difference between merely “green” solutions and more profound changes in physical and social structures.

Unit II – Regional Urban Systems

In *unit two*, we will zoom in to the regional scale to gain a more nuanced understanding of water management, land use, transportation, and housing systems and how these systems have historically conflicted with natural ecosystems. We will explore how existing alternatives can better take advantage of nature’s free ecosystem services without further destroying them. This unit will conclude with an in-class midterm exam.

Unit III – Sustainable Urban Neighborhoods

Unit three will explore neighborhood-scale decisions and how they influence our day-to-day lives. This unit is design-focused and will therefore cover rubrics such as Leadership in Energy and Environmental Design (LEED), and techniques to conserve and harness energy at the local scale. This unit will also address how we plan for resilient cities in the face of a changing climate.

Unit IV – Green Buildings and Individual Choices

Unit four considers how site level and individual, day-to-day consumption decisions have an influence on the environment. We will discuss site layout, low-impact interior design, and transportation choices.

Course Objectives

Throughout the semester, students will:

1. Develop a more **critical, multi-scaled perspective** about decisions in the built environment

2. Build a **vocabulary** and the **ability to communicate** about the built environment, sustainability, and sustainable development
3. Engage in critical **self-reflection** about *where* and *how* they live
4. Become an **agent** for positive social and environmental change and contribute substantially to local knowledge of sustainability

This course also prepares students for subsequent courses on sustainability in the Department of Urban and Regional Planning to include UP 205: Ecology and its Applications, UP 405: Watershed Ecology and Planning, UP446: Sustainable Planning Seminar, UP456: Sustainable Planning Workshop, UP466: Energy, Planning, and the Built Environment, and UP480: Sustainable Design Principles.

Course Format

The course is delivered through a mix of teaching and learning methods including seminars, peer-led discussions, guest lectures, site visits, assignments, and projects. Class sessions are seminar-based, encouraging active participation and enabling students to learn from each other. You will prepare for sessions by reading a selection of recommended articles. The course is organized as follows. Prior to the first class of each week, students are required to complete the assigned readings for the week and submit a **reading reflection** (explained below). Most class sessions will follow one of the following formats:

1. *Interactive lecture/discussion*: Beginning with the instructor providing an overview of the basic questions and debates dealt in that session's readings. The second part of these sessions will have an assigned student(s) **discussion leader** (see below) to initiate and sustain discussions. All students are expected to actively participate.
2. *Online lessons*: Lessons facilitated online via Illinois Compass. You will not report to the classroom for these sessions but will be responsible for going through the material (slides and/or videos) on the assigned day. Lesson material will be discussed during the next in-class session.
3. *Designed activities or in class exercises*: In addition to or in lieu of lectures/discussions, certain classes may have activities or exercises intended to supplement the learning objectives such as films or videos, group work, quizzes, quick writes, field trips, etc.

The experiential dimensions of the course will include:

- Students will attend a public meeting in the local CU area where sustainability issues are discussed. Students will take notes and describe how sustainability stakeholders (city planners, developers, residents...) are addressing the challenges and conflicts of realizing a more sustainable urbanism. Sustainability stakeholders from the local community will attend student presentations at the end of the semester to provide feedback on sustainability assessments
- Students will have the opportunity to participate in several site visits and tours to see urban sustainability in practice. Possible sites include the Passive House Institute's Smith

House in Urbana, LEED certified buildings on campus, a Boneyard Creek walk exploring storm water management with green infrastructure, the Urbana wastewater treatment plant, and a trip to a local eco-coop to see what a community-scale alternative to conventional development looks like.

- Students will conduct a sustainability assessment of their hometown. This semester long project will give students a chance to examine sustainability issues in their hometown (or other familiar place) starting at the regional or metropolitan scale and moving down through the city and neighborhood to conclude with the choices we make as individuals at the household scale. Students will make either actual or virtual site visits to access how variations in the built environment shape sustainability issues in our communities. Students will share their work with each other via postings to an e-portfolio.

Reading Reflections Blog and Discussion Leader Roles

Reading reflections on the week's upcoming assigned readings must be submitted to the **Reading Reflections Blog** on Compass by **12:00pm (noon) on the Monday** of each week. These submissions are meant to demonstrate your engagement with course material and provide feedback to me about ideas or concepts that may be confusing or need further explanation. Your reflections should be written in paragraph form and respond to the following prompts:

- Reading #1: Title...
 - What do YOU think is the author's main point?
 - What did you like about the paper? What did you not like about the paper?
 - Identify some aspect of the reading that made an impression on you (new fact, enlightening observation, new twist to an old idea, writing style, relationship to another reading, etc.).
 - State one question you would like to ask the class, or one aspect of the reading that you did not understand.
- Reading #2... : Title... repeat... items 1 through 5.

In addition to responding to the above prompts for each reading you will be given a **guiding question(s)** for the week's module – found on Compass. A brief response to these questions should be included in your post. These questions are to encourage you to think critically about what you have read and what the authors are telling us about urban sustainability. Questions will be posted on the **Introduction** page of each lesson module (week) in Compass.

Discussion leader dates will be assigned in on Day 2. On the assigned dates, the discussion leader(s) will be responsible for facilitating a discussion on the readings for the week. Prior to the class session the discussion leader(s) will develop a list of discussion questions in addition to their weekly reading reflection. Post your discussion questions on the Compass by 5:00 PM of the **day before** the planned discussion. Discussion leaders should post their submissions each time as a New Thread in the Discussion Leader "forum" on the Discussion Board. Come to class prepared to facilitate a 30 to 45 minute discussion on the day's readings and topic using a mix

of questions and/or activities. Additional materials such as relevant newspaper articles or videos can also be used to engage your classmates. *If there is more than one discussion leader be sure to coordinate your efforts prior to the class session.*

Course Evaluation

There will be weekly quizzes and a final exam on the material covered in the readings and lectures. There will also be a semester long project that culminates with a final report and presentation. Class participation will be based on class involvement, engagement and attendance, in addition to your performance as discussion leader. If you must miss a class session due to special circumstance such as illness or family emergency, you should notify me via e-mail (dallred2@illinois.edu) as soon as possible. More than two (2) unexcused absences will result in an automatic drop of ten (10) percentage points from your final grade. All assignments should be submitted to Compass on the due date unless otherwise noted. Late assignments will be graded down one letter grade per day (half a letter grade if turned in after class on due date). Grade percentages will be distributed as follows:

Class participation/discussion leader	15%	Final exam	20%
Reading reflections	20%	Sustainability assessment	15%
Weekly quizzes	20%	Public meeting reflection	10%

Transformation of numerical grade to letter grade will be according to the schedule below:

A	93-100	C+	77-79.9
A-	90-92.9	C	73-76.9
B+	87-89.9	C-	70-72.9
B	83-86.9	D+	67-69.9
B-	80-82.9	D	60-66.9

The general grading rubric for assignments is as follows:

An “A” assignment demonstrates original thought and synthesis of ideas and sophisticated, cogent analysis. It is clearly written and presented.

A “B” assignment includes above average analysis with appropriate evidence to support ideas. It is clearly written and presented.

A “C” assignment shows a basic level of understanding, with analysis limited to obvious arguments. Writing is competent. It is adequate work.

A “D” assignment misunderstands or misrepresents the material or is so poorly written that it obscures the analysis. It is inadequate work.

Class participation and discussion leader (15%): You are expected to be an engaged participant in class and a thoughtful and prepared discussion facilitator on your assigned day. Attendance will be taken daily. Your role as a discussion leader will be graded based on timeliness and thoughtfulness of submissions, relevance of moderated discussions to the assigned readings, and your ability to engage a broad section of the class.

Reading reflections blog (20% total): Weekly posts to Compass that demonstrate your familiarity with that week’s readings and give you the opportunity to reflect on what you are learning. I will review your posts throughout the semester and assess a final grade based on following directions (responding to prompts) and the completeness of the task.

Public meeting reflection (10%): Students will attend a public meeting in the local CU area where sustainability issues are discussed. Students will take notes and describe how city planners, developers, and residents are addressing the challenges and conflicts of realizing a sustainable urbanism.

Weekly quizzes (20%): Weekly quizzes will be facilitated online through the course Compass site. Quizzes must be completed by **5:00PM** on the Friday of each week. These quizzes will focus on the **critical terms and concepts** that will also appear on your final exam. It is therefore in your best interest to complete the quiz independently.

Final exam (20%): Your final exam will evaluate your understanding of the most important concepts taught in this course.

Sustainability assessment project (15%): In this project you will apply the concepts and ideas from the course as a way to better understand the sustainability issues in your hometown. The project consists of two assignments. Assignments correspond to course units looking at regional and local sustainability issues. Students will also provide peer review and feedback of your classmates submissions. Students will present on their assessments at the end of the semester.

Readings

You can access all required readings on **Illinois Compass**. Readings are listed by week (“lesson” modules in Compass) in the schedule below. All required readings on the schedule **must** be completed prior to the beginning of the first class for that week. For example, students should have read all the required readings in the Lesson 2 (week 2) module folder **BEFORE** they arrive to class on January 25 and with enough time to have submitted their reading reflection by noon

on the same day. Reading for this class is imperative for contribution to discussion. Failure to keep up with required readings seriously inhibits learning and will most likely reflect poor performance on assignments and exams, as well as the evaluation of your in class participation.

Course Policies

Student conduct: From the University Student Code, Article 1, Part 3: Students enrolling in the University assume an obligation to conduct themselves in a manner compatible with the University's function as an educational institution and suitable to members of the academic community. Students are responsible for knowing their rights and responsibilities as found in the student code at <http://www.admin.uiuc.edu/policy/code/index.html>.

Special Circumstances: Due to the participatory nature of this course, please communicate any expected or unexpected absences with the instructor as early as possible. Every effort will be made to work with students with unusual or unexpected obligations outside the course (family emergencies, health issues, participation in University sanctioned activities, etc.) Students with disabilities or special needs who require any accommodations to facilitate full participation and completion of the course should contact the instructor as soon as possible. Please refer to the Disability Resources and Educational Services at (<http://www.disability.illinois.edu/>) for more information.

Safety and Security in the Classroom: Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with any kind of emergency – like fire, severe weather or if someone is trying to hurt you – we have three options: Run, hide or fight. Please refer to the General Emergency Response Recommendations at <http://police.illinois.edu/dpsapp/wp-content/uploads/2016/08/syllabus-attachment.pdf> for more information.

Schedule and Required Readings

Unit I – Global Sustainability Issues and Debates: In this unit, we will introduce the key terms, fundamental issues, and debates of urban sustainability. We will discuss the concept of planetary boundaries and the basic science of climate change and its relationship to human activities. We will examine how human settlements have changed throughout time, and how recent human activity (e.g. how and where we live) in particular threatens global ecosystems.

- Week 1 – What is urban sustainability?
 - ❖ Themes: Course introduction, urban, sustainability, ecological vs. technical sustainability
 - ❖ Readings
 - i. Orr, David. 1988. 'Two Meanings of Sustainability'. Chapter 11 in *Hope is an Imperative*. Island Press. (2011).
 - ii. Robinson, J. 2004. Squaring the Circle? Some thoughts on the idea of sustainable development. *Ecological Economics*. 48. 369-384.
 - iii. Tidwell, Mike. "To really save the planet, stop going green." *Washington Post*. (Dec 6, 2009): B1.
 - iv. Ross, Andrew. 2011. "The dark side of the 'green' city." *New York Times*. 7 November 2011.
- Week 2 – Natural systems in crisis
 - ❖ Themes: Climate change, biodiversity, ecological footprint, natural capital
 - ❖ Readings
 - i. World Wildlife Fund. 2012. *Living Planet Report 2012: Biodiversity, biocapacity, and better choices*.
 - ii. Orr, David. 2009. *Down to the Wire: Confronting Climate Collapse*. Oxford University Press. Introduction (pp. 1-9)
 - ❖ Assigned: Project Step 1 – Review the project description and requirements
- Week 3 – Climate change causes and effects
 - ❖ Themes: Greenhouse gas emissions, energy resource extraction and production
 - ❖ Readings
 - i. Black, Richard. 2011. "Polar ice loss, quickens, raising seas." *BBC News: Science & Environment*.
 - ii. Smil, Vaclav. 2006. *Twenty-First Century Energy: Some sobering thoughts*. *OECD Observer*. No. 258/59.
 - iii. Podesta, John and Romm, Joseph. *The need to beat our oil addiction*. *Politico*. May 3, 2010.
 - iv. Porter, Eduardo. 2017, Jan 18. On climate change, even states in forefront are falling short. *The New York Times*, <https://nyti.ms/2jVqHEz>.
 - v. Maykuth, Andrew. 2011. "Marcellus Shale gas development fueling PA boom." *Philadelphia Inquirer*. 1 Apr 2011.

- vi. Broder and Krauss. 2011. "US offers key support to Canadian pipeline." New York Times. 26 August 2011.

❖ Assigned:

- i. Project Step 2 – Choose a location to study for your project
- ii. Public Meeting Reflection

Unit II – Regional Urban Systems: In this unit, we will start looking at how we plan for urban sustainability at the regional or metropolitan scale. Local plans have regional impacts. Water management, land use, transportation, and housing systems have historically been the responsibility of individual cities, creating externalities and inefficiencies that unnecessarily contribute to urban sprawl and degrade natural systems. We will explore alternatives that coordinate urban growth at the scale of labor markets, commute sheds to better take advantage of nature's free ecosystem services without further destroying them.

- Week 4 – Urban development trends, trajectories, and impacts
 - ❖ Themes: Suburbanization, sprawl, placelessness
 - ❖ In class video: James Howard Kunstler, TED Lecture: the Tragedy of Suburbia (<http://video.google.com/videoplay?docid=-3057280178909051497#>)
 - ❖ Readings
 - i. Jackson, Kenneth. 1985. "The Drive-in Culture of Contemporary America" The Crabgrass Frontier: The Suburbanization of the United States. Pp. 59-68 in LeGates, R.T. and Stout, F. The City Reader 4th Edition. Routledge: New York.
 - ii. Dudley, Michael Quinn. 2001. Sprawl as Strategy: City Planners Face the Bomb. Journal of Planning Education and Research. 21: 52-63
 - ❖ Assigned: Project Step 3 – Assignment 1
- Week 5 – The regional dilemma
 - ❖ Themes: Fragmentation, tragedy of the commons, interurban competition, green infrastructure, watersheds
 - ❖ Readings
 - i. Hardin, Garrett. 1968. Tragedy of the Commons. Science. 162.
 - ii. Worster, Donald. "Watershed Democracy: recovering the lost vision of John Wesley Powell
 - iii. Wines, Michael. 2014. Colorado river drought forces a painful reckoning for States. New York Times, Jan. 5, 2014.
 - iv. Benedict, M.A. and McMahon, E.T. Green Infrastructure: Smart Conservation for the Twenty-First Century. Sprawl Watch Clearing House Monograph Series.
- Week 6 – Regional planning and sustainable growth
 - ❖ Themes: Growth management, smart growth, VMT, regional coordination
 - ❖ Readings
 - i. Reid Ewing, Keith Bartholomew, Steve Winkelman, Jerry Walters, and Don Chen, Growing Cooler: The Evidence on Urban Development and Climate Change. Washington: Urban Land Institute, 2008.

- ii. Wheeler, Stephen M. 2000. Planning for Metropolitan Sustainability. *Journal of Planning Education and Research*. 20: 133.
- Week 7 – The challenges and opportunities of demographic change
 - ❖ Themes: Aging in place, household size, housing preferences
 - ❖ Readings
 - i. US Census Bureau. Census Explorer. <http://www.census.gov/censusexplorer/>
 - ii. Katz, Bruce and Rodin, Judith. “An impending national transformation.” *POLITICO*. May 9, 2010. 07:38AM. http://www.politico.com/news/stories/0510/36963_Page2.html
 - iii. Arieff, Allison. 2017, January 29. A housing crisis for seniors. *New York Times*, <https://nyti.ms/2jIPY4R>.
 - ❖ Field trip to the Boneyard Creek Second Street Basin

Unit III – Sustainable Neighborhoods: In this unit we will explore neighborhood-scale decisions and how they influence our day-to-day lives. This unit is neighborhood design-focused and will therefore cover rubrics such as Leadership in Energy and Environmental Design (LEED) that focus on creating sustainable communities, and techniques to conserve and harness energy at the local scale. You will have a chance to seek out examples of sustainable neighborhoods and reflect on how the built environment of your own community facilitates or inhibits sustainable lifestyle choices. This unit will also address how we plan for resilient cities in the face of a changing climate.

- Week 8 – Sustainability at the community scale
 - ❖ Themes: Urban design, community development
 - ❖ Readings
 - i. Holland, Marc. The eight pillars of a sustainable community. HB Lanarc.
 - ii. Huler, Scott. 2010. “Introduction: Raleigh versus the garbage disposal.” Chapter 1 in *On the Grid: A plot of land, an average neighborhood, and the systems that make our world work*. Rodale Inc.
 - iii. Farr, Douglas. 2008. *Sustainable Urbanism: Urban design with nature*. New Jersey: John Wiley & Sons. Pp. 125-138.
 - iv. Duany, Plater-Zyberk, and Speck. Chapter 10 “How to make a town” in *Suburban Nation*.
 - v. The City of Urbana Climate Action Plan (skim)
 - ❖ Assigned: Project Step 4 – Assignment 2
 - ❖ **Due: Project Assignment 1 – Exploring Regional Sustainability**
- Week 9 – Urban transportation systems and healthy cities
 - ❖ Themes: Transit, environmental justice, equity, complete streets, walkability
 - ❖ Readings
 - i. Agyeman, Julian, Robert D. Bullard, and Bob Evans. 2002. Exploring the nexus: bringing together sustainability, environmental justice, and equity. *Space and Polity* 6(1): 77-90.

- ii. Campbell, Scott. 1996. Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development. *Journal of the American Planning Association*. Summer, 1996.
- iii. Gallagher, Mari. Examining the Impact of Food Deserts on Public Health in Chicago. Mari Gallagher Research & Consulting Group.
- iv. Majora, Carter. "Greening the ghetto" TED lecture.
- v. Oyer, Nicholas. 2013. A mobility wunderkind: Transportation lessons from Germany. *Planning Magazine*

❖ **Due: Peer review of Project Assignment 1**

- Week 10 – SPRING BREAK
- Week 11 – Community-scale alternatives to conventional development
 - ❖ Themes: Energy alternatives, renewables, micro-energy, eco-development
 - ❖ Readings
 - i. United States Department of Energy. Federal Energy Management Program. Introduction to Renewable Energy Technologies.
 - ii. Sussman, Edna. 2008. Reshaping municipal and county laws to foster green building, energy efficiency, and renewable energy. *N.Y.U. Environmental Law Journal*. Volume 16: 1-43
 - iii. Cardwell, Diane. 2012. Solar Installers Offer Deals, Gaining Converts. *The New York Times*. 9 May 2012.
 - iv. Bealty, Timothy. 2007. Envisioning solar cities: Urban futures powered by sustainable energy. *Journal of Urban Technology* 14(2): 31-46.
 - v. Dawson, Jonathan. 2006. Ecovillages: New Frontiers for Sustainability. Schumacher Briefings. White River Junction, Vermont: Chelsea Green Publishing. Chapters 1-2.
 - vi. Baker, Linda. 2009. Green at City Scale: Portland explores how to create 'eco-districts'.
 - vii. Lovell, Jeremy. 2011. "UK 'zero emissions' housing development misses target, but satisfies most residents." *E&E*. 3 June 2011.
 - viii. Cardwell, Diane, and Clifford Krauss. 2017, January 15. A Big Test for Big Batteries. *The New York Times*, <https://nyti.ms/2jluAMR>.

Unit IV – Green Buildings and Individual Choices: In this unit we will explore how site level design considerations and individual, day-to-day consumption decisions have an influence on the environment. We will discuss low-impact interior design, individual dietary choices, and transportation choices. **This unit will conclude with final project presentations of your sustainability assessment project and a final exam.**

- Week 12 – Site-scale design and planning for resilience
 - ❖ Themes: Green building, vulnerability
 - ❖ Readings
 - i. Feuer, Alan. 2014. Building for the next big storm. *New York Times* Oct. 25, 2014.

- ii. Freedman, Andrew. 2013. Up to 5 billion face entirely new climate by 2050. *Climate Central*.
 - iii. Hall, Keith (ed.). Sun, Light, and Fresh Air. Green Building Bible Volume 1, 3rd Edition. Green Building Press.
 - iv. Hall, Keith (ed.). Greening the Kitchen. Green Building Bible Volume 1, 3rd Edition. Green Building Press.
 - v. Hall, Keith (ed.). Straw Bale Construction. Green Building Bible Volume 1, 3rd Edition. Green Building Press.
- ❖ Field trip TBD
- ❖ **Due: Project Assignment 2 – Assessing Local Sustainability**
- Week 13 – Greening buildings
 - ❖ Themes: Eco-interiors, low-impact design
 - ❖ Readings
 - i. Lovins, Amory. 2007. Rocky Mountain Institute Visitor’s Guide.
 - ii. Material on BIF LEED certification.
 - ❖ Walking field trip to LEED Platinum Electrical and Computer Engineering Building.
 - ❖ **Due: Peer review of local sustainability assessment milestone**
- Week 14 – Site-scale systems
 - ❖ Themes: Water systems, electronics and appliances
 - ❖ Readings
 - i. Hall, Keith (ed.). 2008. Waste Water Management. The Green Building Bible, Volume 1. 3rd Edition. Green Building Press. pp. 380-386.
 - ii. Anorve, Cesar. (1998) "Box 4.2: San Luis Beltran" in Winbald, Uno (ed.), Ecological Sanitation. pp. 66.
 - iii. Farghalli, Nancy. 2009. "Recycling 'Gray Water' Cheaply, Safely." National Public Radio. 8 June 2009.
 - iv. Smithers, Rebecca. 2011. "Paper towels least green way of drying hands, study finds." The Guardian. 11 November 2011.
 - v. "Why firms go green." Schumpeter, The Economist. 12 November 2011.
 - vi. Kojima, Kazuko. 2011. The Japanese engineer calling for a life without electricity. The Guardian. 4 November 2011.
 - ❖ Assigned: Project Step 5
- Week 15 – Student presentations
 - ❖ In class: Sustainability assessment project presentations
- Week 16 – Student presentations and final exam
 - ❖ **Due: Public meeting reflection**
 - ❖ Final exam online.

Summary of Sessions

SESSION	WEEK	DATE	DAY	LESSON TOPIC
1	1	Jan 17	T	Course introduction
2	1	Jan 19	Th	Understanding “urban” and “sustainability”
3	2	Jan 24	T	Natural systems in crisis [online]
4	2	Jan 26	Th	Global environmental issues
5	3	Jan 31	T	Climate change causes and effects [online]
6	3	Feb 2	Th	Large-scale energy resource extraction and production
7	4	Feb 7	T	Film – Cool It!
8	4	Feb 9	Th	Urbanization and suburbanization post WWII
9	5	Feb 14	T	The regional dilemma [online]
10	5	Feb 16	Th	Regional water systems
11	6	Feb 21	T	Sprawl, growth management, and “smart growth” [online]
12	6	Feb 23	Th	Regional planning; guest speaker
13	7	Feb 28	T	Social systems and demographic change
14	7	Mar 2	Th	Green infrastructure – walking tour Boneyard Creek
15	8	Mar 7	T	Neighborhood design and LEED-ND [online]
16	8	Mar 9	Th	Introduction to community scale issues
17	9	Mar 14	T	Environmental justice and transportation infrastructure [online]
18	9	Mar 16	Th	Planning healthy cities – neighborhood discussion
19	10	Mar 21	T	SPRING BREAK
20	10	Mar 23	Th	SPRING BREAK
21	11	Mar 28	T	Energy alternatives, renewables, and micro-energy
22	11	Mar 30	Th	Community-scale alternatives [online]
23	12	Apr 4	T	Introduction to site-scale design
24	12	Apr 6	Th	Solar farm site tour
25	13	Apr 11	T	Green buildings - walking tour ECE building
26	13	Apr 13	Th	Eco-interiors [online]
27	14	Apr 18	T	Site-scale water systems
28	14	Apr 20	Th	Electronics and appliances [online]
29	15	Apr 25	T	Sustainability assessment presentations
30	15	Apr 27	Th	Sustainability assessment presentations
31	16	May 2	T	Sustainability assessment presentations