Urban Sustainability
NRE 537: Syllabus
University of Michigan
Fall 2016
Tuesday and Thursday, 2:30pm-4:00pm, Dana 1046
3 Credits

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Course Description
As engines of capital accumulation, cities have often been viewed as environmental sacrifice zones. Some critics have argued that ‘sustainable cities’ is an oxymoron. Nonetheless, the debate over sustainable development generally, and sustainable urbanism specifically, has succeeded in reshaping and broadening discourse around cities and attendant policies and outcomes – both in industrialized and industrializing countries. Implying that sustainable use of natural resources involves social justice and economic development as well as environmental concerns, the notion of sustainability has led away from narrower conceptions of urban environmentalism, toward more consideration for the future, greater integration of social and economic goals with environmental and ecological objectives, and hence a fundamental rethinking of how cities should be theorized, planned and managed.

This course introduces graduate students to the emerging field of urban sustainability from multiple disciplinary perspectives, primarily industrial ecology, urban political ecology, urban ecology, and planning. The course provides students with the theoretical and methodological tools in which to explore the potential for a sustainable urbanism. Approaches to foster more sustainable and resilient forms of urbanization and urban life – ranging from localization, to industrial symbiosis, to ecological restoration – will be introduced and evaluated. Course deliverables include a midterm exam, a group case-project, and three writing responses. A field trip to Detroit and meetings with stakeholders also form course components.
Learning Objectives
By the end of this course, you should be able to:
1. Connect sustainability concepts and technology to real-world urban challenges, including individual/social needs and political debates;
2. Understand the importance (and difficulty) of defining and fostering urban sustainability;
3. Present complex material to a diverse audience in a succinct and effective manner;
4. Facilitate effective discussions, while being attentive to diverse opinions and perspectives;
5. Read and write more effectively, both essential skills for your future.

Required Texts
You are required to purchase two books: 1) Cronon, W. (2009). Nature's Metropolis: Chicago and the Great West. WW Norton & Company; and 2) Schimel, J. (2012). Writing Science: How to write papers that get cited and proposals that get funded. Oxford University Press. These texts are in your local bookstore and can also be purchased on amazon.com or other internet bookseller. The remaining readings, both required and supplemental, are available in digital form on Canvas. I will provide ample notice of these minor changes in class and a revised syllabus will be posted electronically on Canvas. Readings have been carefully selected, with particular attention to the reading load, which varies considerably over the semester. For some class sessions, the reading load is considerable, and for others there is no required reading at all.

Course Structure
The course is divided into four interdependent sections: 1. Conceptual Foundations of Urban Sustainability; 2. Learning through Cases: Urban Agriculture and the Midterm; 3. Form and Flows of the City: Theory and Case Studies; and 4. Synthesis and Moving Forward. The course meets twice a week for 1.5 hours each time and includes lecture, discussion of readings, presentation of cases, and building-block activities. The course has an experiential component consisting of an optional field trip to Detroit and periodic in-class exercises. The primary deliverables, which are graded, are as follows: 1) Course participation; 2) three essay papers; 3) a midterm exam; and 4) a group case study project.

Course Participation
All students are expected to attend and participate in the scheduled class sessions. Unexcused absences will be reflected in final grades. Attendance will be taken ten times randomly during the semester, which forms part of your course grade. In order to participate fully, completing the required reading for each session is also essential.

Essay Papers
You are required to write three short essays. These essays should be a minimum of three pages in length, and a maximum of five pages (double spaced, 1” margins, and 12 pt Times New Roman font). All ideas, terms, and quotes that are not your own need to be properly cited in your essay. For these three essays, please use the APA referencing style and include a bibliography at the end of your essay. This bibliography does not count towards the length requirement. Your essays will be evaluated based on the clarity and completeness, as well as on spelling, grammar, and referencing. The required text by Schimel will form the basis for these essays. The essay assignments will be discussed in class and posted on Canvas at least two weeks prior to their due date. The due dates for the essays are: Essay #1, September 27th; Essay #2, November 15th; Essay #3, December 13th. These essays should be submitted through Canvas (as an uploaded Microsoft Word/Open Office document) and are due by the beginning
of class on these days. You will turn in and receive comments on your essays via Canvas. Be sure to answer the essay question(s) completely and be sure to proofread your essays carefully before submitting them.

Exam
There is an in-class midterm exam on October 13th. This exam covers the first portion of the course. There will not be any alternative date for this exam. As you make travel plans, please keep these dates in mind. There is no final exam.

Case Study
Each student will contribute to presenting a case study as part of a student team (5-6 students in each team). These case studies are divided into three graded components:

1. 1-page Case Summary
2. Case Materials and Edge Notes (~3-4 pages)
3. Case Presentation, with an in-class activity that you have designed to engage your classmates on the topic or in discussing the Case Materials.

These case studies will also include the following:

- **Use of mass media or interviews** (news articles, audio-visual media, etc.) to convey the multiple perspectives on the topic;
- **Use of Social Explorer** (SocialExplorer.com), a “Story Map” (https://storymaps.arcgis.com/en/), or another interactive mapping tool to convey the spatial, demographic, and socio-economic context of the topic;
- **Use of at least one urban sustainability indicator.**

We will talk more about the structure of a case study and how to develop one in class.

In-Class Exercises and Activities
Urban sustainability is a topic we will explore both through the lens of expert opinion (i.e., Prof. Newell’s lectures and assigned readings) as well as through class discussions, leveraging our diverse viewpoints and experiences. In-class activities, which form a component of your participation grade, are designed to help you to engage in thoughtful discussions with your classmates on the weekly topic. Examples of these activities include:

**Week 1: “Managing Citations in Mendeley”** - Whether seeking a career in research or plan to work as a sustainability expert in government or private industry, you will be reading papers, book, and reports. A citation manager is an essential tool for this purpose. We will use Mendeley, as it is freely available and works on all operating systems (available on Windows, Mac, and GNU/ Linux). During or after class, you will need to sign up for a (free) account with Mendeley, download the Mendeley software client, and join the “Urban Sustainability” group.

**Week 2: “Material Flow Analysis”** - Material flow analysis (MFA) is a technique for identifying the major inputs and outputs of a material system, ranking the relative magnitudes of the flows, and opportunities for closing loops, minimizing waste, etc. You will be expected to complete the MFA worksheet in-class and turn it in.

**Week 3: “Introduction to the Q Method”** - The Q Method is a quantitative tool for measuring and classifying the range of perspectives on an issue by sorting the “alignments” of a group of people responding to a panel of subjective statements. You will be expected to complete the Q-method matrix and submit it by Canvas before 6 PM, Sunday, Sept. 18 (so there is time to collate everyone’s alignments). The Q-method matrix will either be e-mailed to you or provided on Canvas.
Grading
Your course grade includes work completed as an individual and as a group. Your course grade will be based on a mid-term exam, three short essay papers, a group case study, and class participation as determined by attendance, by completion of in-class exercises, and by discussion of the course readings. The grading breakdown is as follows:

<table>
<thead>
<tr>
<th>Group Deliverable</th>
<th>Individual Deliverables</th>
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<tbody>
<tr>
<td>Assignment</td>
<td>Assignment</td>
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<tr>
<td>Percentage of total grade</td>
<td>Percentage of total grade</td>
</tr>
<tr>
<td>Case Summary</td>
<td>Essay Papers (3)</td>
</tr>
<tr>
<td>10%</td>
<td>30%</td>
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<tr>
<td>Case Material</td>
<td>Mid-term Exam</td>
</tr>
<tr>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>Case Presentation</td>
<td>Attendance</td>
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<tr>
<td>10%</td>
<td>10%</td>
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<tr>
<td></td>
<td>In-class exercises</td>
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<tr>
<td></td>
<td>5%</td>
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<tr>
<td></td>
<td>Discussion of reading</td>
</tr>
<tr>
<td></td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td>30%</td>
<td>70%</td>
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</table>

Grades will be posted in the “Gradebook” tab in Canvas. Final grades are based on the total percentage received for the semester. Equivalent letter grades are as follows: A+ (98.50–100%), A (93.5-98.49%), A- (89.50–93.49%), B+ (87.50-89.49%), B (83.5-88.49%), B- (79.50–83.49%), C+ (77.50-79.49%), C (73.5-78.49%), and C- (69.50–73.49%).

Writing Help
A primary objective of this course is to develop your writing skills. You may find it helpful to contact the Sweetland Writing Center, which offers free individual writing conferences for graduate students who are working on course papers, as well as dissertations, etc. In addition to the required text by Schimel, helpful research and writing aids include The Craft of Research (Booth, Colomb, and Williams), The Elements of Style (Strunk and White), and A Manual for Writers of Research Papers, Theses, and Dissertations (Turabian). Online sources with useful guidance on writing include OWL on-line writing lab from Purdue University (https://owl.english.purdue.edu/) and the University of Wisconsin writing handbook (http://writing.wisc.edu/Handbook/)

Accommodations for Students with Disabilities
Please contact me during the first week of class so that your needs can be accommodated. You may also wish to contact Services for Students with Disabilities (G-664 Haven Hall, 505 South State St.: 734-763-3000, http://ssd.umich.edu).

Academic Integrity
The University of Michigan seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. Plagiarism will not be tolerated and there will be severe consequences. For more information, please see http://www.rackham.umich.edu/current-students/policies/academic-policies/section10
<table>
<thead>
<tr>
<th>Day</th>
<th>Topic</th>
<th>Readings</th>
<th>Activity</th>
<th>Key Deliverables</th>
</tr>
</thead>
</table>
| Tues, Sept. 6 | Introduction to Course                          | Cronon (2009) – Preface and Prologue; Ch 3 (Grain)                       | ● Discussion guidelines  
● What is urban sustainability? (Mental maps) | Think about your subject area interests                                           |
| Thurs, Sept. 8 | What is urban sustainability?                   | Revi et al. (2014) (pp. 538-562 only).  
Seto et al. (2012)                                                      | ● Discuss readings  
● Discuss case topics  
● Managing citations in Mendeley | Sign up for Mendeley; Join our “Urban Sustainability” Group on Mendeley;  
Rank Top 3 topic areas (in Canvas)                                           |
| Tues, Sept. 13 | Three ‘Ecologies’: Industrial Ecology and Urban metabolism | Bai (2007); Brunner (2007); Kennedy (2007);                              | ● Discuss readings  
● Material Flow Analysis exercise                                                 |                                                                                 |
| Thurs, Sept. 15 | Three ‘Ecologies’: Urban Political Ecology      | Robbins (2004); Heynen et al (2006);                                     | ● Discuss Readings  
● Intro to the Q method  
● Alignment with sustainability perspectives | Q-method matrix Due (6:00 PM, Sept. 18)                                          |
| Tues, Sept 20 | Three ‘Ecologies’: Urban Ecology & Interdisciplinary Prospects | Grimm et al. (2008); Wu (2014); Schimel (2012), Chs. 2 and 3             | ● Discuss readings  
● Results of Q method exercise                                                  |                                                                                 |
| Thurs, Sept. 22 | Indicators of Urban Sustainability               | Science for Environment Policy (2015); Schimel (2012), Ch. 4             | ● Discuss readings  
● Indicator exercise                                                               |                                                                                 |
| Tues, Sept 27 | Indicators in Practice: City of Ann Arbor       | Ann Arbor Sustainability Framework (2012); Sustainability Dashboard (online) | ● Field Trip to city hall (Matt Naud)                                          | Essay #1 Due                                                                     |
## Module #2: Urban Agriculture, the ‘Case’ Approach, and Midterm

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic/Activity</th>
<th>Reading/Resource</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thurs, Sept. 29</td>
<td>Topic #1: Urban Agriculture</td>
<td>McClintock (2010); Gallagher (2010) – Ch 3; Seto and Ramankutty (2016)</td>
<td>• Discuss readings  &lt;br&gt;• Intro to Social Explorer and demographic context</td>
</tr>
<tr>
<td>Tues, Oct 4</td>
<td>Guest Presentation: Michigan Sustainability Case Initiative</td>
<td>Michigan Case Initiative Reading</td>
<td>• Presentation of Sustainability Cases Project &lt;br&gt;• Present Case</td>
</tr>
<tr>
<td>Thurs, Oct 6</td>
<td>Case Presentation #1: Urban Agriculture in Detroit</td>
<td>Case #1 Material</td>
<td>• Case Activity</td>
</tr>
<tr>
<td>Sat, Oct 8</td>
<td>Field Trip: Urban Agriculture in Detroit (Elective)</td>
<td>No required reading</td>
<td>• Visit Michigan Urban Farming Initiative (MUFI)</td>
</tr>
<tr>
<td>Tues, Oct 11</td>
<td>Midterm Exam Review</td>
<td>No required reading</td>
<td>• Bring exam questions to class &lt;br&gt;Essay #1 returned</td>
</tr>
<tr>
<td>Thurs, Oct 13</td>
<td>Midterm Exam</td>
<td>No required reading</td>
<td>• Multiple choice and short answer exam &lt;br&gt;MIDTERM</td>
</tr>
<tr>
<td>Tues, Oct 18</td>
<td>NO CLASS</td>
<td>No required reading</td>
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## Module #3: Form and Flows of the City: Theory and Case Studies

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic/Activity</th>
<th>Reading/Resource</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thurs, Oct 20</td>
<td>In-Class Case Prep</td>
<td>Schimel, Chapters 5 and 6 (Recommended)</td>
<td>• Work in groups</td>
</tr>
<tr>
<td>Tues, Oct 25</td>
<td>In-Class Case Prep</td>
<td>No required reading</td>
<td>• Work in groups &lt;br&gt;Midterm Exam Returned Case Summary Due</td>
</tr>
<tr>
<td>Thurs, Oct 27</td>
<td>In-Class Case Prep</td>
<td>No required reading</td>
<td>• Work in groups</td>
</tr>
<tr>
<td>Tues, Nov 1</td>
<td>Topic #2 Urban Green Space</td>
<td>Wolch et al. (2014); Heynen et al. (2006); Gallagher (2010) - Ch 5, Ch 6</td>
<td>• Team #2 introduces case</td>
</tr>
<tr>
<td>Thurs, Nov 3</td>
<td>Case Presentation #2 Urban Green Space</td>
<td>Case #2 Material</td>
<td>• Student-led case activity</td>
</tr>
<tr>
<td>Date</td>
<td>Topic #3</td>
<td>Reading(s)</td>
<td>Activities</td>
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<tr>
<td>Tues, Nov 8</td>
<td>Flows of Water</td>
<td>Gandy (2004); Hoff et al. (2014)</td>
<td>Discuss readings; Team #3 introduces case</td>
</tr>
<tr>
<td>Thurs, Nov 10</td>
<td>Case Presentation #3 Flows of Water</td>
<td>Case #3 Material</td>
<td>Student-led case activity</td>
</tr>
<tr>
<td>Tues, Nov 15</td>
<td>Topic #4 Buildings and Energy</td>
<td>Ivanova et al (2016); Rees (2009); Kennedy (2015)</td>
<td>Discuss readings; Team #4 introduces case</td>
</tr>
<tr>
<td>Thurs, Nov 17</td>
<td>Case Presentation #4 Buildings and Energy</td>
<td>Case #4 Material</td>
<td>Student-led case activity</td>
</tr>
<tr>
<td>Tues, Nov 22</td>
<td>Topic #5 Transportation and Urban Form</td>
<td>Fishman (2015); Gallagher (2010), Ch 4; Gillham (2002)</td>
<td>Discuss readings; Team #5 introduces case</td>
</tr>
<tr>
<td>Thurs, Nov 24</td>
<td>NO CLASS</td>
<td>No required reading</td>
<td></td>
</tr>
<tr>
<td>Tues, Nov 29</td>
<td>Case Presentation #5 Transportation and Urban Form</td>
<td>Case #5 Material</td>
<td>Student-led case activity</td>
</tr>
<tr>
<td>Thurs, Dec 1</td>
<td>Topic #6 Flows of Waste</td>
<td>Marvin (2006) Reading TBD</td>
<td>Discuss readings; Team #6 introduces case</td>
</tr>
<tr>
<td>Tues, Dec 6</td>
<td>Case Presentation #6 Flows of Waste</td>
<td>Case #6 Material</td>
<td>Student-led case activity</td>
</tr>
</tbody>
</table>

**Module #4: Synthesis and Moving Forward**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading(s)</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thurs, Dec 8</td>
<td>Towards Synthesis: In the Academy</td>
<td>Cronon (1992), Epilogue; Broto et al (2012); Newell and Cousins (2014)</td>
<td>Mental Maps Revisited</td>
</tr>
</tbody>
</table>
READING LIST
(Note: this list may change slightly over the term. I will give you ample advance notice should such changes occur)

Week 1: What is Urban Sustainability?
Sept. 6 and Sept. 8

Goals/ Tasks/ Deliverables
- Explore research interests, “What is urban sustainability?”
- Discuss readings

Required for Tuesday, September 6:

Required for Thursday, September 8:

Supplemental Reading Material (Optional)

Sept. 13 and Sept. 15

Goals/ Tasks/ Deliverables
- Understand and practice Material Flow Analysis (MFA); turn in worksheet
- Learn about the Q Method; turn in Q-Method matrix
- Discuss readings
Required for Tuesday, September 13:

Required for Thursday, September 15:

Supplemental Reading Material (Optional)

Week 3: Urban Ecology and Interdisciplinary Prospects
Sept. 20 and Sept. 22

Goals/ Tasks/ Deliverables
- Discuss results of the Q Method exercise
- Understand and critique urban sustainability indicators
- Discuss Readings
Required for Tuesday, September 20:

Required for Thursday, September 22:

Supplemental Reading Material (Optional):

**Week 4, Sept. 27**
**Indicators of Urban Sustainability in Practice (in Ann Arbor)**

**Goals/ Tasks/ Deliverables**
- Visit with the City of Ann Arbor’s Environmental Coordinator, Matt Naud
- Discuss Readings
- Essay #1 due Tuesday, September 27

**Required Readings for Tuesday, September 27:**
Week 4, Sept. 29  Urban Agriculture

Goals/ Tasks/ Deliverables
- Discuss Readings
- Social Explorer and demographic context

Required Readings for Thursday, September 29

Supplemental Reading Material (Optional):

Week 5  The Case Approach and Urban Agriculture in Detroit
Oct. 4 and Oct. 5

Goals/ Tasks/ Deliverables
- Understand the advantages of a case study in exploring a debate
- Understand how a case study is constructed
- Presentation of case study
- Optional field trip to MUFI in Detroit: Saturday, October 8

Required Reading for Tuesday, October 4
Michigan Sustainability Case

Required Reading for Thursday, October 6
Team #1 Case Materials

Week 6  Midterm Exam (Review and Test)
Oct. 11 and Oct. 13

Goals/ Tasks/ Deliverables
- Prepare for the midterm on Tuesday, Oct. 11
- Take the midterm exam on Thursday, Oct. 13
- Essay #1 returned
Week 7  
**In-Class Preparation of Case Studies**
Oct. 20

**Goals/ Tasks/ Deliverables**
- **NO CLASS on Tuesday, October 18**
- Work in groups preparing case studies on Thursday, October 20

**Supplemental Reading Material (Optional):**

Week 8  
**In-Class Preparation of Case Studies**
Oct. 25 and Oct. 27

**Goals/ Tasks/ Deliverables**
- Work in groups preparing case studies
- Midterm exam returned
- **Case Summary due Tuesday, October 25**

Week 9  
**Topic #2 Urban Green Space**
Nov. 1 and Nov. 3

**Goals/ Tasks/ Deliverables**
- Discuss readings
- Team #2 presents its case study on an urban green space topic

**Required Readings for Tuesday, November 1:**
Required Readings for Thursday, November 3
Team #2’s Case Materials and Edge Notes

Supplemental Reading Material (Optional):

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**Week 10**
**Topic #3: Flows of Water**
**Nov. 8 and Nov. 10**
**Goals/ Tasks/ Deliverables**
- Discuss readings
- Team #3 presents its case study on an urban water flows topic

Required Readings for Tuesday, November 8:

Required Readings for Thursday, November 10:
Team #3’s Case Materials and Edge Notes

Supplemental Reading Material (Optional):
Week 11  Topic #4: Buildings and Energy
Nov. 15 and Nov. 17

Goals/ Tasks/ Deliverables
● Discuss readings
● Team #4 presents its case study on a buildings and energy topic
● Essay #2 due Tuesday, November 15

Required Readings for Tuesday, November 15:

Required Readings for Thursday, November 17:
Team #4’s Case Materials and Edge Notes

Supplemental Reading Material (Optional):
Week 12, Nov. 22  Topic #5: Transportation and Urban Form (Introduction)

Goals/ Tasks/ Deliverables

● Discuss readings

● NO CLASS on Thursday, November 24

Required Readings for Tuesday, November 22:


Supplemental Reading Material (Optional):


Week 13, Nov. 29  Topic #5: Transportation and Urban Form (Case Presentation)

Goals/ Tasks/ Deliverables

● Team #5 presents its case study on a transportation and urban form topic

● Essay #2 returned

Required Readings for Tuesday, November 29:
Team #5’s Case Materials and Edge Notes

Goals/ Tasks/ Deliverables
- Discuss readings

**Required Readings for Thursday, December 1:**

*Other Reading TBD.*

**Supplemental Reading Material (Optional):**


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**Week 14, Dec. 6   Topic #6: Flows of Waste (Case Presentation)**

Goals/ Tasks/ Deliverables
- Team #6 presents its case study on an urban waste topic

**Required Readings for Tuesday, December 6:**
Team #6’s Case Materials and Edge Notes
**Week 15, Dec. 8 and 13  Synthesis and Moving Forward**

**Goals/ Tasks/ Deliverables**
- Discuss readings
- **Essay #3 due Tuesday, December 13**

**Required Readings for Thursday, December 8:**

**Required Readings for Tuesday, December 13**