Foundations of Sustainable Food Systems

Fall 2016

(Draft, subject to change with two-week notice)

Location: Dana Building 1046
Meeting times: 11:30AM-1PM, Tuesdays and Thursdays; mandatory field trip, Saturday (9/17/2016)
Credits: 3
Instructors: Jennifer Blesh, Lesli Hoey, and Andrew Jones
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Office: Jennifer (Room 2572, Dana Building), Lesli (Room 1248A, Architecture and Art Building, A&AB),
Andrew (Room 3846, School of Public Health)
Office hours: Jennifer (by appointment), Lesli (by appointment), Andrew (Tuesdays, 3-5PM)

Course Summary
Today we have entered a new geological epoch – the Anthropocene – characterized by unprecedented human alteration of global processes. This fast-paced global change both affects and is affected by agriculture. Concurrent food, energy, water, and climate crises, and a global rise in obesity amidst widespread hunger and undernutrition, have re-focused public attention on the deficiencies and complexities of the global food system. The dominant industrial food system has increasingly well-documented social, ecological, and health-related costs. Yet, a diversity of ‘alternative’ food systems demonstrates that agriculture can be resource conserving, equitable, and health promoting.

Increasing food system sustainability requires interdisciplinarity along multiple dimensions: reconnecting agriculture with ecological systems, reshaping food production systems to be more nutrition-sensitive, and ensuring that policies and institutions that impact the food system safeguard social equity and the environment. Linking theory and practice is also essential, involving the diverse range of actors moving food from farm to fork. It is, therefore, not surprising that demand is growing for interdisciplinary scholars and other professionals who are equipped to analyze and address the complex challenges of sustainable food production and global food and nutrition security.

This course will offer a unique opportunity for students to gain interdisciplinary knowledge of food systems and to integrate theory and practice through experiential learning and dialogue-based inquiry both on campus and in the community. Interdisciplinary research and education require bridging worldviews and recognizing the values implicit in different disciplinary and theoretical perspectives. This course will incorporate multiple perspectives, from the local to the global level, as well as an understanding of how those perspectives are underpinned by different epistemologies and value systems. That is, this course aims to directly engage with values, exploring how they shape food systems. Benefitting from collaborative interdisciplinary instruction that draws on the expertise of three professors from three different departments at the University of Michigan, students will develop competencies and cognitive skills in the area of food system sustainability including critical and systems thinking, creativity and analytical ability.
Course objectives
During this course, students will:

1) study the characteristics, outcomes, objectives, and values of different contemporary food systems in the Global North and South;
2) analyze and critique peer-reviewed literature examining the processes and outcomes of food systems models through an interdisciplinary lens;
3) practice communicating ideas about food systems in oral presentations to peers in a group setting;
4) participate as a member of a multidisciplinary team;
5) engage with food systems stakeholders in classroom and field settings; and
6) explore their own and others’ diverse values and viewpoints about food systems based on supporting evidence.

Course competencies
Upon completion of this course, students will be able to:

1) describe key concepts across disciplines and perspectives related to sustainable food systems;
2) evaluate assumptions and values about food systems that underpin one’s own thinking and that of others;
3) apply and synthesize scientific evidence in support of arguments that address food systems research questions;
4) analyze and critically evaluate food systems research results for evidence-based assessments and ethical decision-making;
5) communicate clearly and effectively about food systems through writing and oral presentations in a professional setting of diverse peers; and
6) engage in respectful dialogue, collaborative teamwork, and problem-solving with those of differing viewpoints and backgrounds.

Suggested prior coursework
Because this course is open to students from different academic disciplines and professional backgrounds, and because it is available to both upper-level undergraduate students as well as graduate students, we expect that enrolled students will bring with them a diversity of skills, knowledge and practical experiences that will broadly benefit the entire class. For these same reasons, however, it is unrealistic to expect that every student should have completed a similar curriculum prior to enrolling in this course. We suggest, though, that students will benefit from having completed one or more of the following courses prior to joining this class: an introductory course in biology, environmental science, ecology, urban planning, food policy, epidemiology, and/or human nutrition.
# Class schedule in brief

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignments due</th>
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<tbody>
<tr>
<td>1</td>
<td>September 6</td>
<td>Course introduction</td>
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<tr>
<td></td>
<td>September 8</td>
<td>Interdisciplinarity and systems thinking</td>
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<td>2</td>
<td>September 13</td>
<td>Food systems history</td>
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<td></td>
<td>September 15</td>
<td>Interdisciplinary research design and introduction to problem-based</td>
<td>Survey on group project topic preference (due</td>
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<td></td>
<td>September 17</td>
<td>(Saturday) Mandatory field trip: Flint, Michigan</td>
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<td>3</td>
<td>September 20</td>
<td>Unit I problem-based learning activity and field trip reflection</td>
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<td>3</td>
<td>September 22</td>
<td>The ecosystem concept</td>
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<td>4</td>
<td>September 27</td>
<td>Nutrient cycles and soil fertility</td>
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<td>September 29</td>
<td>Agriculture and climate change</td>
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<td>5</td>
<td>October 4</td>
<td>Biodiversity and agroecosystem function</td>
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<td>October 6</td>
<td>Unit II case study</td>
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<td>October 11</td>
<td>Unit II problem-based learning activity</td>
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<td>6</td>
<td>October 13</td>
<td>Global food systems and human nutrition: key issues</td>
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<tr>
<td>7</td>
<td>October 18</td>
<td>FALL STUDY BREAK: NO CLASSES</td>
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<td>8</td>
<td>October 20</td>
<td>Agrobiodiversity, dietary diversity, and human nutrition</td>
<td>Unit II capstone assignment</td>
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<td>October 25</td>
<td>Sustainable diets</td>
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<td>October 27</td>
<td>The “nutrition transition”</td>
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<td>9</td>
<td>November 1</td>
<td>Unit III debate</td>
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<td>November 3</td>
<td>Unit III problem-based learning activity</td>
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<td>10</td>
<td>November 8</td>
<td>Global food system trends and food movements</td>
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<td>November 10</td>
<td>National food policy and planning trends</td>
<td>Unit III capstone assignment</td>
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<td>11</td>
<td>November 15</td>
<td>Food environments and local food</td>
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<td>November 17</td>
<td>Urban agriculture and food systems planning</td>
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<td>12</td>
<td>November 22</td>
<td>Unit IV case study</td>
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<td>12</td>
<td>November 24</td>
<td>THANKSGIVING: NO CLASSES</td>
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<td>13</td>
<td>November 29</td>
<td>Panel discussion; communication best practices</td>
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<td>December 1</td>
<td>Student presentations</td>
<td>Unit IV capstone assignment</td>
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<td>December 6</td>
<td>Student presentations</td>
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<td>December 8</td>
<td>Student presentations</td>
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<td>15</td>
<td>December 13</td>
<td>Global synthesis lecture and discussion; course wrap-up</td>
<td>Final project report</td>
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**UNIT I: INTRODUCTION TO SYSTEMS THINKING, SUSTAINABILITY AND GLOBAL FOOD SYSTEMS**

**UNIT II: FARMING SYSTEMS AND THE ENVIRONMENT**

**UNIT III: THE INTERACTION OF FOOD SYSTEMS AND HUMAN NUTRITION**

**UNIT IV: FOOD POLICY and PLANNING**

**UNIT IV: GLOBAL SYNTHESIS, STUDENT PRESENTATIONS AND COURSE WRAP-UP**
Assignments

Individual assignments

Readings and reflection questions
Students are expected to complete the assigned (required) readings, and be prepared to critically discuss them in class. Students are also expected to prepare 1-2 reflection questions in response to the readings from 7 classes of their choosing, and post them under the “Discussions” tab of the course Canvas site under “Reading reflection questions” by 11:59PM the day before the class readings are due. The classes for which you choose to write reflection questions cannot be classes in which case studies or problem-based learning activities are covered. Reflection questions should not merely be aspects of the readings that were not clear to you – they are meant to be provocative conversation starters. We will select some of your questions to integrate into lectures or to stimulate discussion within small groups or in the class as a whole. Submission of these reflection questions will contribute to your participation grade.

Unit capstone assessments
At the end of Units II, III, and IV, students will complete a take-home assessment consisting of three short-answer questions that will require students to critically apply concepts from the readings and lectures of the unit. Students will be provided the take-home assessment on the second-to-last day of the unit and will have at least one week to complete the assessment. The completed assessment must be turned in on Canvas before the start of class on the day indicated in the syllabus.

Interdisciplinary group assignment

Problem-based learning research project
During the term, interdisciplinary groups will work together on an assigned research project that applies a problem-based learning approach. Instructors will form the groups and introduce the assignment in more detail on September 15. Groups will work on this project largely outside of class, but three days are allotted (i.e., the last day of each unit) to work on different components of the project together during class and to receive feedback from the instructors. You will be given instructions about what to expect for each those components at the start of each unit. These initial components will be graded as pass/fail. If groups do not come prepared, a “fail” grade means that their final paper will lose a third of a letter grade, with the potential of losing an entire letter grade over the course of the semester if a group is never prepared. Groups will present their proposal and findings to the class during one of the last three class sessions. A final report will also be due on the last day of class (5-7 pages, single spaced, 12 point font). Members of each group will carry out an evaluation of their peers within their groups at the end of the semester. This evaluation will contribute to students’ participation grade.
Grading

Participation & attendance: 15 points
Unit capstone assessments: 45 points (15 points each)
Final group project (presentation): 15 points
Final group project (written report): 25 points
Total points possible: 100 points

Letter grades will be assigned based on the following cut-offs:
A+ 97% or greater
A 93-96.9%
A- 90-92.9%
B+ 87-89.9%
B 83-86.9%
B- 80-82.9%
C+ 77-79.9%
C 73-76.9%
C- 70-72.9%

A Rubric for Evaluation of Participation
A significant portion of your grade for this class (15%) is based on your participation in class discussions (including your reading and reflection question postings), activities, group peer evaluations, and the class sessions devoted to the problem-based research projects. Participating in this class does not always mean talking a great deal. An important part of satisfactory participation in this class is your active role in creating, and engaging in, a community of learners. It entails your building on and synthesizing comments and contributions from others, and on showing appreciation for others’ involvement. Some of the most helpful things you can do are to bring a new resource to the classroom, or highlight something interesting and compelling you witness in others. There are multiple ways that quieter learners can participate. Below are some specific examples of high quality participation we will be observing and noting:

• Attend each class, on time.
• Please do not use your phone during class, since if you are “there,” you are not “here” with us.
• Your laptops are only to be used if you are taking notes or doing project work, and are not appropriate for Facebook, email, and other personal uses.
• Change seats often in an attempt to get to know every student. One of our goals is to create a cohesive learning community. You may learn the most from someone with whom you do not initially connect.
• Ask a question or make a comment that shows you are interested in what another person says, or does, and/or encourages another person to elaborate on something they have already said or done.
• Alert us to a resource (a reading, website, video) not addressed in the syllabus that adds a new dimension or perspective to our learning.
• Make a comment that underscores the linkage between two or more students’ contributions and make this link explicit in your comment. Contribute something that builds on, or springs from, what someone else has said or done.
• If you think it is appropriate, **ask the group for a pause** to slow the pace of conversation or activity to give you, and others, time to think/process, especially during our activities and field trip.

• **Make a summary observation** that takes into account several people’s contributions and which **touches on a recurring theme** in a discussion or of our work together.

• Find a way to **express appreciation for the learning** you have gained from a discussion or from our group work together. Try to be specific about what it was that helped you understand something better.

• **If you have a critical comment, make it diplomatically,** focusing on the issue at hand, and not on the people with whom you have a differing viewpoint.

To be effective, many of the above can be done one-on-one, or in small groups. You do not always have to speak in front of the entire class, particularly since we have a large class size. There are many ways in which students who are more comfortable with intimacy and small groups can participate. We will use this rubric to assess your participation during this course.

**Accommodations for students with disabilities**
In compliance with the University of Michigan Rackham Graduate School policy, we are available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Office of Services for Students with Disabilities to determine eligibility for appropriate accommodations. See: [http://www.rackham.umich.edu/policies/accommodations_for_graduate_students_with_disabilities/](http://www.rackham.umich.edu/policies/accommodations_for_graduate_students_with_disabilities/).

**Academic Integrity**
“The conduct of a student registered or taking courses at the University of Michigan should be consistent with that of a professional person. Courtesy, honesty, and respect should be shown by students toward faculty members, guest lecturers, administrative support staff, and fellow students. Similarly, students should expect faculty to treat them fairly, showing respect for their ideas and opinions and striving to help them achieve maximum benefits from their experience.

“Student academic misconduct refers to behavior that may include plagiarism, cheating, fabrication, falsification of records or official documents, intentional misuse of equipment or materials (including library materials), and aiding and abetting the perpetration of such acts. The preparation of reports, papers, and examinations, assigned on an individual basis, must represent each student’s own effort. Reference sources should be indicated clearly. The use of assistance from other students or aids of any kind during a written examination, except when the use of aids such as electronic devices, books or notes has been approved by an instructor, is a violation of the standard of academic conduct” (Standard of Academic Conduct, University of Michigan School of Public Health).” Source: Advisory Committee on Academic Programs (ACAP).
If you are concerned that you might be plagiarizing – using the words, data, images or ideas of others without clear attribution – you probably are. As a member of the university community, and student in the Rackham School of Graduate Studies, you are bound by their respective rules and regulations on Academic and Professional Integrity, which includes documenting the use of source materials. If you are confused, speak to one of the instructors. The following websites are useful:

- University of Michigan’s policies on academic and professional misconduct, http://www.rackham.umich.edu/policies/academic_and_professional_integrity/
- UM Urban Planning professor Scott Campbell’s site for explaining plagiarism (and useful advice for improving your writing) (http://www-personal.umich.edu/~sdcamp/up540/writingtips.html).
- Pamphlet on avoiding plagiarism from UC-Davis: http://sja.ucdavis.edu/files/plagiarism.pdf
- Pamphlet on unacceptable paraphrases from Indiana University Writing Tutorial Services http://www.indiana.edu/~wts/pamphlets/plagiarism.pdf
- Advice on how to use proper formats for footnotes or endnotes and bibliography, including how to cite websites: https://owl.english.purdue.edu/owl/section/2/

Diversity, Equity, and Inclusion

We recognize the histories of social discrimination globally, and seek to promote and extend opportunities for members of all groups that historically have been marginalized. We commit to developing the institutional mechanisms and norms necessary to promote the values of diversity, equity, and inclusion, both inside and outside our classrooms. To this end, we aim that our course will

1) **be inclusive**, 2) **promote brave discussions**, 3) **follow multicultural ground rules** and 4) **abide by UM policies and procedures**.

1) **Inclusive courses**, are those in which teachers and learners co-create and co-sustain environments that support and encourage all members to participate equitably. See http://crlt.umich.edu/multicultural-teaching/inclusive-teaching-strategies for more resources.


3) **Multicultural ground rules** acknowledge diverse experiences in the classroom and offer strategies for holding one another appropriately accountable. See examples from the UM Program on Intergroup Relations and others at http://ncdd.org/rc/item/1505.

4) **UM policies and procedures** can be found at http://diversity.umich.edu with additional resources and instructions for reporting discrimination at https://sph.umich.edu/diversity-equity-inclusion/resources.html.

Source: School of Public Health (SPH) Diversity Committee, August 2016
Readings
No textbook is required for this course. All required readings are provided under the “Files” tab of the course Canvas site. **Readings in bold typeface are required.** Those in regular typeface are recommended, but not required. These readings are subject to change.

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<tr>
<th>Week</th>
<th>Date</th>
<th>Topic &amp; Readings</th>
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<tbody>
<tr>
<td>1</td>
<td>September 6</td>
<td>Course introduction</td>
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</table>
|      | September 8| Interdisciplinarity and systems thinking  
| 2    | September 13| Food systems history  
|      | September 15| Interdisciplinary research design; Introduction to problem-based learning research projects  
  - Patton, Michael Quinn Ch. 5, Designing Qualitative Studies. ONLY pages 215-222 and 227-230 (the rest is a resource).  
  - Patton, Michael Quinn Ch. 12, The Paradigms Debate and a Utilization-Focused Synthesis. ONLY pages 432-438 (the rest is a resource)  
  - Stephanie Evergreen’s advice on communicating quantitative data effectively. See her [blog](http://writingcenter.unc.edu/handouts/evidence/), a talk she gave at the University of Michigan last semester or this [checklist](http://writingcenter.unc.edu/handouts/evidence/). |
| 3    | September 20| None                                                                                                                                                                                                                                                                                                                                             |
| 3    | September 22| The ecosystem concept and management paradigms  
  - Shennan, C. 2008. Biotic interactions, ecological knowledge and agriculture. *Philosophical Transactions of the Royal Society B-Biological Sciences*. **Read only Sections 1, 2, and 3 (pages 717-718).**  
<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Authors/References</th>
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</table>
- USGCRP- Climate change impacts on U.S. Agriculture.  


“Outcomes”).


October 6

Unit II case study: Nutrient pollution from the Mississippi River Basin and Gulf Hypoxia

- **Required reading: Case Study Summary**

6 October 11

Unit II problem-based learning activity

**UNIT III: THE INTERACTION OF FOOD SYSTEMS AND HUMAN NUTRITION**

6 October 13

Global food systems and human nutrition: key issues


7 October 18

**FALL STUDY BREAK: NO CLASSES**

October 20

Agrobiodiversity, dietary diversity, and human nutrition

- Sibhatu KT, Krishna VV, Qaim M. Production diversity and dietary diversity in smallholder farm households. *Proceedings of the National Academy of Sciences 2015: www.pnas.org/cgi/doi/10.1073/pnas.1510982112*
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>References</th>
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</table>
• Leroy JL, Gadsden P, Rodríguez-Ramírez S, González de Cossío T. Cash and in-kind transfers in poor rural communities in Mexico increase household fruit, vegetable, and micronutrient consumption but also lead to excess energy consumption. Journal of Nutrition 2010;140:612–7.  
| 9 November 1 | Unit III debate                          | • Summaries and talk about Julie Guthman’s book on obesity Weighing In:  
  o University of California lecture by Julie Guthman video – watch minutes 3 to 53: [https://www.youtube.com/watch?v=xncj4YYvgTk](https://www.youtube.com/watch?v=xncj4YYvgTk)  
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<tr>
<th>Date</th>
<th>Activity</th>
<th>Topics</th>
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<tr>
<td>November 3</td>
<td>Unit III problem-based learning activity</td>
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<td>• “Why Menu Labeling is Important” Center for Science in the Public Interest, an NBC news-reel (video) about menu labeling in New York City: <a href="http://www.youtube.com/user/CSPITV#p/search/0/WHH8agtF2U">http://www.youtube.com/user/CSPITV#p/search/0/WHH8agtF2U</a></td>
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<td>• Wootan M. Why Menu Labeling is Important: Center for Science in the Public Interest, 2008. [Video file: 3 minutes]. Retrieved from <a href="http://www.youtube.com/watch?v=WHH8agtF2UQ">http://www.youtube.com/watch?v=WHH8agtF2UQ</a></td>
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<td>• Beuchelt, T., and D. Virchow. Food sovereignty or the human right to adequate food: Which concept serves better as international development policy for global hunger and poverty reduction? <em>Agriculture and Human Values</em>, 29: 259-273, 2012</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
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|            |                                                                      | Freeman, A. Fast food: Oppression through poor nutrition. *California Law Review*, 95(6)  
| November 22 | Unit IV case study: Food for All - Food Insecurity and Farmers Livelihoods Policy | Required reading: Case Study Summary  

**UNIT V: GLOBAL SYNTHESIS, STUDENT PRESENTATIONS AND WRAP-UP**

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<thead>
<tr>
<th>Date</th>
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<td>November 24</td>
<td>THANKSGIVING: NO CLASSES</td>
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<td>November 29</td>
<td>Panel discussion; communication best practices</td>
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<td>December 1</td>
<td>Student presentations</td>
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<td>December 6</td>
<td>Student presentations</td>
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<tr>
<td>December 8</td>
<td>Student presentations</td>
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|            |                                                                      | Explore: [http://www.sustainablemeasures.com/indicators](http://www.sustainablemeasures.com/indicators)  
|            |                                                                      | Other readings to be determined                                      |