

**ENVIRON 462-001 EAS 528-001 NUTR 555-001 URP 427-001 URP 527-001**

**Foundations of Sustainable Food Systems**

Fall 2019

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

**Location:** Dana Building 1024

**Meeting times:** 1:00PM – 2:30PM, Tuesdays and Thursdays

**Credits:** 3

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Lesli – Wednesdays, 10:30AM-12:30PM

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Room 2366 in the new wing of the Architecture and Art Building, A&AB

**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 and broader aspects of food systems. 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 is increasingly resulting in well-documented social, ecological, and health-related costs. Yet, a diversity of ‘alternative’ food systems demonstrates that agriculture and food systems 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. As a result, 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 local to global levels, as well as an understanding of how those perspectives are underpinned by different epistemologies and value systems. That is, this course directly engages with values, exploring how they shape food systems. Benefiting from collaborative interdisciplinary instruction that draws on the expertise of three professors from three different departments, 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;
- 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) apply systems thinking tools to the analysis of food systems issues including those related to agroecology, public health, and food policy and planning;
- 3) evaluate assumptions and values about food systems that underpin one's own thinking and that of others;
- 4) apply and synthesize scientific evidence in support of arguments that address food systems research questions;
- 5) analyze and critically evaluate food systems research results and policies for evidence-based assessments and ethical decision-making;
- 6) communicate clearly and effectively about food systems through writing and oral presentations in a professional setting of diverse peers; and
- 7) 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

Week	Date	Topic	Assignments due
<b>UNIT I: INTRODUCTION TO SYSTEMS THINKING, SUSTAINABILITY AND GLOBAL FOOD SYSTEMS</b>			
1	September 3	Course introduction	
	September 5	Interdisciplinarity and systems thinking	
2	September 10	Panel discussion	
	September 12	Food systems history	
<b>UNIT II: FARMING SYSTEMS AND THE ENVIRONMENT</b>			
3	September 17	The ecosystem concept – Lauren Schmitt, PhD Candidate, SEAS	
	September 19	Nutrient cycles and soil fertility – Brendan O'Neill, Assistant Research Scientist, SEAS	
4	September 24	Biodiversity and agroecosystem function – Jeremy Moghtader, Farm Manager, UM Campus Farm	
	September 26	Unit II case study	Survey on group project topic preference
5	October 1	Research design/communication best practices and intro to problem-based learning research projects	
	October 3	Problem-based learning in-class activity I	Unit II capstone assignment
<b>UNIT III: THE INTERACTION OF FOOD SYSTEMS AND HUMAN NUTRITION</b>			
6	October 8	Sustainable food systems and healthy diets: Key issues	
	October 10	Sustainable diets	
7	October 15	<b>FALL STUDY BREAK: NO CLASSES</b>	
	October 17	Agrobiodiversity and healthy diets	
8	October 22	Guest speaker: Amanda Edmonds	
	October 24	Unit III debate: Soda taxes	
9	October 29	Problem-based learning in-class activity II	
<b>UNIT IV: FOOD POLICY and PLANNING</b>			
9	October 31	National US food system trends and policies	Unit III capstone assignment
10	November 5	Regional and local food systems planning	
	November 7	Urban agriculture and food environments	
11	November 12	Policy advocacy and social movements	
	November 14	Food planning case study	
<b>UNIT V: GLOBAL SYNTHESIS, STUDENT PRESENTATIONS AND COURSE WRAP-UP</b>			
12	November 19	Problem-based learning in-class activity III	Unit IV capstone assignment
	November 21	Integrated lecture (topic TBD)	
13	November 26	Student presentations	Engaged learning reflection
	November 28	<b>THANKSGIVING: NO CLASSES</b>	
14	December 3	Student presentations	
	December 5	Student presentations	
15	December 10	Global synthesis lecture and discussion; course wrap-up	Final project report

## Assignments

### Individual assignments

#### *Reading reflections*

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 **5 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, which leaves you with 12 classes for which you can write a reflection. Out of your 5 responses, **at least one set of reflection questions must be for each of the Units II, III and IV.** 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 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.

#### *Engaged learning activity and reflection*

During the first half of the semester, students should identify and participate in a food systems activity to gain practical experience outside of the classroom with food systems issues. The time commitment will vary based on the activity, but a minimum requirement would be 3-4 hours. After you complete the activity, submit a one-page (single-spaced) reflection statement that expresses what you learned about barriers, opportunities, and strategies for food systems change through your participation in the food systems-related activity, and how your disciplinary interests or experiences may have influenced your perspectives. The reflection should be submitted on Canvas and will be graded pass/fail as part of your participation grade. The due date for the reflection is **November 26<sup>th</sup>**, but you may submit your reflection at any time during the semester. Below is a list of suggested activities. You are welcome to identify others if you get instructor approval beforehand:

- Volunteer at D-Town Farm or the Oakland Avenue Urban Farm in Detroit
- Volunteer at the UM Campus Farm
- Volunteer with Growing Hope in Ypsilanti
- Volunteer at a local food bank (Food Gatherers, Gleaners, Forgotten Harvest, etc.)

## 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 **October 1**; students will be able to identify the topics they would prefer to work on in late September. Groups will work on this project largely outside of class, but three days are allotted, at the end of Units II, III and IV, 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 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. 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 (i.e. attendance, engaged learning reflection, group work, etc.):	15 points
Unit capstone assessments (15 points each):	45 points
Final group project (presentation):	15 points
Final group project (written report):	25 points
<b>Total points possible:</b>	<b>100 points</b>

Letter grades will be assigned based on the following cut-offs:

A+	97% or greater	B-	80-82.9%
A	93-96.9%	C+	77-79.9%
A-	90-92.9%	C	73-76.9%
B+	87-89.9%	C-	70-72.9%
B	83-86.9%		

## **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.
- ***Make a summary observation*** that considers 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/](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 (DEI)**

We follow the DEI statements established by Taubman College of Architecture and Urban Planning and the School of Public Health, noted below.

"Taubman College affirms the principles of diversity, equity, and inclusion as we organize resources and priorities that align with our values. We seek to have a diverse group of persons at all levels of the college - students, faculty, staff and administrators - including persons of different race and ethnicity, national origin, gender and gender expression, socioeconomic status, sexual orientation, religious commitment, age, and disability status. We strive to create a community of mutual respect and trust, a community in which all persons and their respective backgrounds, identities, and views are allowed to be made visible and communicated without the threat of bias, harassment, intimidation, or discrimination."

"The University of Michigan School of Public Health (SPH) seeks to create and disseminate knowledge with the aim of preventing disease and promoting the health of populations worldwide. 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, SPH upholds the expectations that all courses 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.
- 2) ***Brave*** (rather than safe) discussions promote diversity and social justice learning by acknowledging dynamics of oppression and privilege both inside and outside the classroom. Read more at <http://ssw.umich.edu/sites/default/files/documents/events/colc/from-safe-spaces-to-brave-spaces.pdf>.
- 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>."

## Readings

No textbook is required for this course. All 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. Please pay close attention to underlined notes that often indicate that you are only required to read a portion of the article.

Week	Date	Topic & Readings
<b>UNIT I: INTRODUCTION TO SYSTEMS THINKING, SUSTAINABILITY AND THE GLOBAL FOOD SYSTEM</b>		
1	September 3	Course introduction
	September 5	Interdisciplinarity and systems thinking <ul style="list-style-type: none"> <li>• Capra, F. 1985. Criteria for systems thinking. <i>Futures</i>. October, pg. 475-478.</li> <li>• Eigenbrode, S.D. et al. 2007. Employing philosophical dialogue in collaborative science. <i>BioScience</i> 57(1): 55-64.</li> <li>• Thorsøe, M., H. Alrøe, and E. Noe. 2014. Observing the observers: uncovering the role of values in research assessments of organic food systems. <i>Ecology and Society</i> 19: 46-51.</li> <li>• Lélé, S. and R. B. Norgaard. 2005. Practicing interdisciplinarity. <i>Bioscience</i>, 55(11), 967–975.</li> <li>• Capra, F. 1994. From the parts to the whole: Systems thinking in ecology and education. <i>Elmwood Quarterly</i>. Summer/Fall-35-41</li> </ul>
2	September 10	Panel discussion
	September 12	Food systems history <ul style="list-style-type: none"> <li>• Roberts, W. 2008. <i>The No-Nonsense Guide to World Food</i>. Chapter 2, “Brave new food”</li> <li>• McMichael, P. 2009. A food regime genealogy. <i>Journal of Peasant Studies</i>, 36(1):139-169. <u>ONLY pages 139-154</u> (the rest is optional).</li> <li>• Friedmann, H. 2000. What on Earth is the Modern World-System? Foodgetting and Territory in the Modern Era and Beyond, <i>Journal of World-Systems Research</i>, 2: 480-515.</li> <li>• Friedmann H, McMichael P. Agriculture and the state system: The rise and decline of national agricultures, 1870 to the present. <i>Sociologia Ruralis</i> 1989;(2):93-114.</li> </ul>
<b>UNIT II: FARMING SYSTEMS AND THE ENVIRONMENT</b>		
3	September 17	The ecosystem concept and management paradigms <ul style="list-style-type: none"> <li>• Matson, P. A., Parton, W. J., Power, A. G. and Swift, M. J. 1997. Agricultural intensification and ecosystem properties. <i>Science</i> 277: 504–509.</li> <li>• Shennan, C. 2008. Biotic interactions, ecological knowledge and agriculture. <i>Philosophical Transactions of the Royal Society B-Biological Sciences</i>. <u>ONLY Sections 1, 2, and 3 (pages 717-718)</u>.</li> <li>• Nicholls, C.I., Altieri, M.A. and Vazquez, L. 2017. Agroecological principles for the conversion of farming systems. Pages 1-16 in A. Wezel, editor. <i>Agroecological Practices for Sustainable Agriculture</i>. World Scientific, London, UK.</li> <li>• Odum, E.P. 1984. Properties of agroecosystems. In: Lowrance, R. et al. (Eds). <i>Agricultural Ecosystems: Unifying Concepts</i>, 5-12.</li> <li>• Crossley, D.A., G. J. House, R. M. Snider, R.J. Snider, and B.E. Stinner. 1984. The positive interactions in agroecosystems. In: Agricultural Ecosystems: Unifying Concepts, pg. 73–81.</li> <li>• Chapter 1: The ecosystem concept in Chapin, F. S., Matson, P.A. and H. A. Mooney. 2002. Principles of Terrestrial Ecosystem Ecology. New York: Springer.</li> <li>• Tomich, T.P. et al. 2011. Agroecology: A review from a global change perspective. <i>AREE</i> 36:193-222.</li> <li>• SOCLA. Agroecology: concepts, principles, and applications. Contributions to the FAO's International Symposium on Agroecology for Food Security and Nutrition.</li> <li>• Robertson, G. , K. Gross, S. Hamilton, D. Landis, T. Schmidt, S. Snapp, and S. Swinton. 2014. Farming for ecosystem services: An ecological approach to production agriculture. <i>Bioscience</i>: biu037.</li> </ul>

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

<b>UNIT II: FARMING SYSTEMS AND THE ENVIRONMENT</b>		
3	September 19	<p>Nutrient cycles and soil fertility</p> <ul style="list-style-type: none"> <li>• <b>Drinkwater, L. E. et al. 2008. Ecologically-based nutrient management. In: Agricultural Systems: Agroecology and Rural Innovation for Development.</b> Snapp, S. and B. Pound, Eds. <u>ONLY pages 161-170.</u></li> <li>• <b>Magdoff, F. and H. van Es. 2000. Building Soils for Better Crops.</b> SARE. <u>ONLY Chapters 2 &amp; 5.</u></li> <li>• Magdoff, F. and H. van Es. 2000. <i>Building Soils for Better Crops</i>. SARE. Chapters 3, 4, 6, 7, 10-12, 20.</li> <li>• Vanek, S. and L.E. Drinkwater. 2013. Environmental, social, and management drivers of soil nutrient mass balances in an extensive Andean cropping system. <i>Ecosystems</i>, 16:1517-1535.</li> <li>• Marriott EE, Wander MM. 2006. Total and labile soil organic matter in organic and conventional farming systems. <i>Soil Science Society of America Journal</i> 70:950-959.</li> <li>• Clarholm M. Interactions of bacteria, protozoa and plants leading to mineralization of soil nitrogen. <i>Soil Biology and Biochemistry</i> 1985; 17:181-185.</li> <li>• McNear Jr., D.H. 2013. The rhizosphere—roots, soil, and everything in between. <i>Nature Education Knowledge</i> 4(3).</li> </ul>
4	September 24	<p>Biodiversity and agroecosystem function</p> <ul style="list-style-type: none"> <li>• <b>Shennan, C. 2008. Biotic interactions, ecological knowledge and agriculture. Philosophical Transactions of the Royal Society B-Biological Sciences.</b> <u>ONLY Sections 4 and 5 (pages 718-721).</u></li> <li>• <b>Wood, S. A., D. S. Karp, F. DeClerck, C. Kremen, S. Naeem, and C. A. Palm. 2015. Functional traits in agriculture: agrobiodiversity and ecosystem services.</b> <i>Trends in Ecology &amp; Evolution</i> 30:531-539.</li> <li>• Khan et al. 2011. Push-pull technology: a conservation agriculture approach for integrated management of insect pests, weeds and soil health in Africa. <i>International Journal of Agricultural Sustainability</i> 9:162-170. <u>ONLY pages 162-164 (up to "Outcomes").</u></li> <li>• Isbell, F., P. R. Adler, N. Eisenhauer, D. Fornara, K. Kimmel, C. Kremen, D. K. Letourneau, M. Liebman, H. W. Polley, and S. Quijas. 2017. Benefits of increasing plant diversity in sustainable agroecosystems. <i>Journal of Ecology</i> 105:871-879.</li> <li>• Martin, A. R., and M. E. Isaac. 2015. Plant functional traits in agroecosystems: a blueprint for research. <i>Journal of Applied Ecology</i> 52:1425-1435.</li> <li>• Blesh, J. In Press. Functional traits in cover crop mixtures: biological nitrogen fixation and multifunctionality. <i>Journal of Applied Ecology</i>.</li> <li>• Jackson, L. E. et al. 2007. Utilizing and conserving agrobiodiversity in agricultural landscapes. <i>Agriculture Ecosystems &amp; Environment</i>, 121:196-210.</li> <li>• Kremen, C., and A. Miles. 2012. Ecosystem services in biologically diversified versus conventional farming systems: benefits, externalities, and trade-offs. <i>Ecology and Society</i> 17.</li> <li>• Snapp, S. S., S. M. Swinton, R. Labarta, D. Mutch, J. R. Black, R. Leep, J. Nyiraneza, and K. O'Neil. 2005. Evaluating cover crops for benefits, costs and performance within cropping system niches. <i>Agronomy Journal</i> 97:322-332.</li> <li>• Russelle, M. P., M. H. Entz, and A. J. Franzluebbers. 2007. Reconsidering integrated crop-livestock systems in North America. <i>Agronomy Journal</i> 99:325-334.</li> <li>• Hooper, D. U. et al. 2005. Effects of biodiversity on ecosystem functioning, a consensus of current knowledge. <i>Ecological Monographs</i>, 75:3-35.</li> </ul>
	September 26	<p>Unit II case study: Nutrient pollution from the Mississippi River Basin and Gulf Hypoxia</p> <ul style="list-style-type: none"> <li>• <b>Required reading: Case Study Summary</b></li> <li>• Blesh, J., and R. E. Galt. 2017. Transitions to agroecological nutrient management practices in the USA Corn Belt. Pages 85-126 in A. Wezel, editor. <i>Agroecological Practices for Sustainable Agriculture</i>. World Scientific, London, UK.</li> </ul>

		<ul style="list-style-type: none"> <li>Blesh, J. and L.E. Drinkwater. 2013. The impact of nitrogen source and crop rotation on nitrogen mass balances in the Mississippi River Basin. <i>Ecological Applications</i>, 23(5):1017-1035.</li> <li>David, M.B., Drinkwater, L. E. and G.F. McIsaac. 2010. Sources of nitrate yields in the Mississippi River Basin. <i>Journal of Environmental Quality</i>, 39:1657-1667.</li> </ul>
5	October 1	Interdisciplinary research design; Introduction to problem-based learning research projects <ul style="list-style-type: none"> <li><b>Patton, Michael Quinn Ch. 5, Designing Qualitative Studies.</b> <u>ONLY pages 215-222 and 227-230</u> (the rest is a resource).</li> <li><b>Patton, Michael Quinn Ch. 12, The Paradigms Debate and a Utilization-Focused Synthesis.</b> <u>ONLY pages 432-438</u> (the rest is a resource)</li> <li><b>Forsyth, Ann. 2008. Skills in Planning: Writing Literature Reviews</b></li> <li>UNC Writing Center, "Evidence": <a href="http://writingcenter.unc.edu/handouts/evidence/">http://writingcenter.unc.edu/handouts/evidence/</a></li> <li>Stephanie Evergreen's advice on communicating quantitative data effectively. See her <a href="#">blog</a>, a <a href="#">talk</a> she gave at the University of Michigan last semester or this <a href="#">checklist</a>.</li> </ul>
	October 3	Problem-based learning in-class activity I
<b>UNIT III: SUSTAINABLE FOOD SYSTEMS AND HEALTHY DIETS</b>		
6	October 8	Sustainable food systems and healthy diets: Key issues <ul style="list-style-type: none"> <li><b>Global Panel on Agriculture and Food Systems for Nutrition. Food systems and diets: Facing the challenges of the 21st century.</b> London, UK: Global Panel on Agriculture and Food Systems for Nutrition, 2016. <u>ONLY Chapter 6</u>.</li> <li><b>Hawkes C, Friel S, Lobstein T, Lang T. Linking agricultural policies with obesity and noncommunicable diseases: A new perspective for a globalising world.</b> <i>Food Policy</i> 2012; 37:343-353.</li> <li>Whitmee S, Haines A, Beyrer C, Boltz F, Capon AG, de Souza Dias BF, et al. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation-Lancet Commission on planetary health. <i>Lancet</i> 2015;386:1973-2028.</li> <li>Hawkes C, Jewell J, and Allen K. A food policy package for healthy diets and the prevention of obesity and diet-related non-communicable diseases: the NOURISHING framework. <i>Obesity Reviews</i> 2013;14:159-68.</li> </ul>
	October 10	Sustainable diets <ul style="list-style-type: none"> <li><b>Willet W, Rockstrom J, Loken B, Springmann M, Lang T, Vermeulen S, Garnett T, Tilman D, DeClerk F, Wood A, Jonell M, Clark M, et al.</b> <i>Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems.</i> <i>Lancet</i> 2019;393:447-92. <u>READ ONLY Section 3 (pp. 470-476)</u>.</li> <li><b>Garnett T. What is a sustainable healthy diet? Discussion Paper.</b> Food Climate Research Network, 2014.</li> <li>Rose D, Heller MC, Willits-Smith AM, Meyer RJ. Carbon footprint of self-selected US diets: nutritional, demographic, and behavioral correlates. <i>American Journal of Clinical Nutrition</i> 2019;109(3):526-534.</li> <li>Tilman D, Clark M. Global diets link environmental sustainability and human health. <i>Nature</i> 2014; 515:518-521.</li> <li>Peters CJ, Picardy J, Darrouzet-Nardi AF, Wilkins JL, Griffin TS, Fick GW. Carrying capacity of US agricultural land: Ten diet scenarios. <i>Elementa: Science of the Anthropocene</i> 2016;4.</li> <li>Gustafson D, Gutman A, Leet W, Drewnowski A, Fanzo J, Ingram J. Seven Food System Metrics of Sustainable Nutrition Security. <i>Sustainability</i> 2016;8(196): doi:10.3390/su8030196.</li> <li>Jones AD, Hoey L, Blesh J, Miller L, Green A, Fink Shapiro L. A Systematic Review of the Measurement of Sustainable Diets. <i>Advances in Nutrition</i> 2016; 7:641–64.</li> <li>Heller MC, Keoleian GA, Willett WC. Toward a life cycle-based, diet-level framework for food environmental impact and nutritional quality assessment: a critical review. <i>Environmental Science &amp; Technology</i> 2013;47(22):12632-47.</li> <li>Hawkins I, Sabaté J. Defining “sustainable” and “healthy” diets in an era of great environmental concern and increased prevalence of chronic diseases. <i>American Journal of Clinical Nutrition</i> 2013;97(5):1151-2.</li> </ul>
7	October 15	<b>FALL STUDY BREAK: NO CLASSES</b>

	October 17	Agrobiodiversity and healthy diets <ul style="list-style-type: none"> <li><b>Bioversity International. Mainstreaming Agrobiodiversity in Sustainable Food Systems: Scientific Foundations for an Agrobiodiversity Index. Bioversity International, Rome, Italy, 2017. ONLY Chapter 2 (pp. 24-45).</b></li> <li>Jones AD. Agricultural biodiversity and diet quality in low- and middle-income countries: a critical review of the emerging research evidence. <i>Nutrition Reviews</i> 2017. doi: 10.1093/nutrit/nux040.</li> <li>Sibhatu KT, Krishna VV, Qaim M. Production diversity and dietary diversity in smallholder farm households. <i>Proceedings of the National Academy of Sciences</i> 2015: <a href="http://www.pnas.org/cgi/doi/10.1073/pnas.1510982112">www.pnas.org/cgi/doi/10.1073/pnas.1510982112</a>.</li> <li>Powell B, Thilsted SH, Ickowitz, Termote C, Sunderland T, Herforth A. Improving diets with wild and cultivated biodiversity from across the landscape. <i>Food Security</i> 2015;7:535-554.</li> <li>Remans R, Fanzo J, Palm CA, DeClerck F. "Ecology and Human Nutrition". In: Integrating Ecology and Poverty Reduction (Carter Ingram J, DeClerk F, Rumbaitis del Rio C, eds.), pp. 53-76. New York: Springer, 2012.</li> </ul>
8	October 22	Guest speaker: Amanda Edmonds
	October 24	Unit III debate: Soda taxes <ul style="list-style-type: none"> <li>Haspel T. Is a soda tax the solution to America's obesity problem? <i>Washington Post</i>. March 23, 2015. <a href="https://www.washingtonpost.com/lifestyle/food/is-a-soda-tax-the-solution-to-americas-obesity-problem/2015/03/23/b6216864-ccf8-11e4-a2a7-9517a3a70506_story.html?noredirect=on">https://www.washingtonpost.com/lifestyle/food/is-a-soda-tax-the-solution-to-americas-obesity-problem/2015/03/23/b6216864-ccf8-11e4-a2a7-9517a3a70506_story.html?noredirect=on</a></li> <li>Keller and Heckman, LLP. Soda Tax Debate Continues. <i>National Law Review</i>. March 26, 2019. <a href="https://www.natlawreview.com/article/soda-tax-debate-continues">https://www.natlawreview.com/article/soda-tax-debate-continues</a></li> <li>Charles D. U.S. Soda Taxes Work, Studies Suggest — But Maybe Not As Well As Hoped. <i>NPR</i>. February 21, 2019. <a href="https://www.npr.org/sections/thesalt/2019/02/21/696709717/u-s-soda-taxes-work-studies-suggest-but-maybe-not-as-well-as-hoped">https://www.npr.org/sections/thesalt/2019/02/21/696709717/u-s-soda-taxes-work-studies-suggest-but-maybe-not-as-well-as-hoped</a></li> <li>Buhl J. The Case Against Soda Taxes. <i>The Tax Foundation</i>. March 15, 2017. <a href="https://taxfoundation.org/case-against-soda-taxes/">https://taxfoundation.org/case-against-soda-taxes/</a></li> <li>Mitchell D. Taxing drinks gives pols a sugar rush. <i>Fortune</i>. July 25, 2014. <a href="https://fortune.com/2014/07/25/soda-tax-san-francisco/">https://fortune.com/2014/07/25/soda-tax-san-francisco/</a></li> <li>Roberto CA, Lawman HG, LeVasseur MT, et al. Association of a Beverage Tax on Sugar-Sweetened and Artificially Sweetened Beverages With Changes in Beverage Prices and Sales at Chain Retailers in a Large Urban Setting. <i>JAMA</i> 2019;321(18):1799–1810.</li> <li>Redondo M, Hernández-Aguado I, Lumbreras B. The impact of the tax on sweetened beverages: a systematic review. <i>American Journal of Clinical Nutrition</i> 2018;108(3):548–563.</li> </ul>
9	October 29	Problem-based learning in-class activity II
<b>UNIT IV: FOOD POLICY &amp; PLANNING</b>		
9	October 31	National US food system trends and policies <ul style="list-style-type: none"> <li><b>Barnett, B. 2014. The last farm bill? <i>Journal of Agricultural and Applied Economics</i>, 46(3): 311-319.</b></li> <li><b>Johnson, R. &amp; J. Monke. 2018. What is the Farm Bill? Washington DC: Congressional Research Service. [Only pages 8 to 13 are required reading – especially focus on the Title(s) you are assigned]</b></li> <li>Alston, J., Sumner, D., and S. Vosti. 2008. Farm subsidies and obesity in the United States: National evidence and international comparisons. <i>Food Policy</i>, 33: 470-479.</li> <li>Hassanein, N. 2011. Matters of scale and the politics of the Food Safety Modernization Act. <i>Agriculture and Human Values</i>, 28: 577-581.</li> <li>Imhoff, D. 2012. <i>Food Fight: The Citizen's Guide to the Next Food and Farm Bill</i>. Healkberg, CA: Watershed Media</li> </ul>

10	November 5	<p>Regional and local food systems planning</p> <ul style="list-style-type: none"> <li>• Vitiello, D. and C. Brinkley. 2013. The hidden history of food system planning. <i>JPH</i>, 13(2): 91-112.</li> <li>• Born, B. and Purcell, M. 2006. Avoid the local trap: Scale and food systems in planning research. <i>Journal of Planning Education and Research</i>, 26. Pp 195-205</li> <li>• Peters CJ, Bills NL, Lembo AJ, Wilkins JL, and Fick GW. 2012. Mapping potential foodsheds in New York State by food group: An approach for prioritizing which foods to grow locally. <i>Renewable Agriculture and Food Systems</i> 27(2): 125-137.</li> <li>• Pothukuchi, K. 2009. Community and regional food planning: Building institutional support in the United States. <i>International Planning Studies</i>, 14(4): 349-367.</li> </ul>
	November 7	<p>Urban agriculture and food environments</p> <ul style="list-style-type: none"> <li>• Shannon, J. 2014. Food deserts: Governing obesity in the neoliberal city. <i>Progress in Human Geography</i>, 38(2): 248-266.</li> <li>• Horst, M., McClintock, N. and L. Hoey. 2017. The Intersection of Planning, Urban Agriculture, and Food Justice: A Review of the Literature. <i>Journal of the American Planning Asscn</i>, 83:3, 277-295.</li> <li>• Freeman, A. 2007. Fast food: Oppression through poor nutrition. <i>California Law Review</i>, 95(6).</li> <li>• Walker, R., Keane, C. and J. Burke. 2010. Disparities and access to healthy food in the United States: A review of food deserts literature. <i>Health and Place</i>, 16: 876-884</li> <li>• Zezza, A. and L. Tasciotti. 2010. Urban agriculture, poverty, and food security: Empirical evidence from a sample of developing countries. <i>Food Policy</i>, 35, 265-273.</li> <li>• Zeeuw, H. and P. Drechse (Eds). 2015. Chatpers 1 and 2 in <i>Cities and Agriculture - Developing Resilient Urban Food Systems</i>. Leusden, The Netherlands: RUAf (Resource Centre on Urban Agriculture and Forestry): <a href="http://www.ruaf.org/publications/cities-and-agriculture-developing-resilient-urban-food-systems">http://www.ruaf.org/publications/cities-and-agriculture-developing-resilient-urban-food-systems</a></li> </ul>
11	November 12	<p>Policy advocacy and social movements</p> <ul style="list-style-type: none"> <li>• Holt-Gimenez, E. and A. Shattuck. 2011. Food crises, food regimes and food movements: rumblings of reform or tides of transformation? <i>The Journal of Peasant Studies</i>, 38:1, 109-144</li> <li>• Allen, P. and Sachs, C. 2007. Women and Food Chains: The Gendered Politics of Food. <i>International Journal of Sociology of Agriculture and Food</i> 15(1):1023. Pp 1-16.</li> <li>• Beuchelt, T., and D. Virchow. 2012. Food sovereignty or the human right to adequate food: Which concept serves better as international development policy for global hunger and poverty reduction? <i>Agriculture and Human Values</i>, 29: 259-273</li> <li>• Campbell, L. 2016. Getting farming on the agenda: Planning, policymaking, and governance practices of urban agriculture in New York City. <i>Urban Forestry and Urban Greening</i>, 19: 295-305.</li> <li>• Hart A., McMichael, P., J. Milder, and S. Scherr. 2016. Multi-functional landscapes from the grassroots? The role of rural producer movements. <i>Agriculture and Human Values</i>, 33:305–322</li> <li>• Hassanein, N. 2003. Food democracy: A pragmatic politics of transformation. <i>J Rural Studies</i>, 9: 77-86</li> <li>• Hoey, L. and A. Sponseller. 2018. "It's hard to be strategic when your hair is on fire": Alternative food movement leaders' motivation and capacity to act. <i>Agriculture &amp; Human Values</i>, 35(3), 595-609.</li> <li>• Jayaraman, S. 2013. <i>Behind the Kitchen Door</i>. Ithaca, NY: Cornell U Press. BOOK – not on Canvas</li> <li>• Pelletier, D, Frongillo, EA, Gervais, SG, Hoey, L, Menon , P, Ngo, T, Stoltzfus, RJ, Shamsir Ahmed, AM., Ahmed, T. 2011. Nutrition agenda setting, policy formulation and implementation: Lessons from the Mainstreaming Nutrition Initiative. <i>Health Policy and Planning</i>, (Feb 3): 1-13</li> <li>• Raja, S., Picard, D., Baek, S., &amp; Delgado, C. 2014. Rustbelt radicalism: A decade of food systems planning in Buffalo, New York (USA). <i>Journal of Agriculture, Food Systems, and Community Development</i>, 4(4), 173–189.</li> <li>• Reynolds, K. and N. Cohen. 2016. Chapter 5: Cultivating policy, pp. 74-93. <i>Beyond the Kale: Urban Agriculture and Social Justice Activism in New York City</i>. Athens, GA: University of GA Press.</li> </ul>
	November 14	<ul style="list-style-type: none"> <li>• Food planning case study</li> </ul>

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

12	November 19	Problem-based learning in-class activity III
	November 21	Integrated lecture: TBD
13	November 26	Student presentations
	November 28	<b>THANKSGIVING: NO CLASSES</b>
14	December 3	Student presentations
	December 5	Student presentations
15	December 10	Global synthesis lecture and discussion; course wrap-up <ul style="list-style-type: none"> <li>• Fraser, E., A. Legwegoh, K. Krishna, M. CoDyre, G. Dias, S. Hazen, R. Johnson, R. Martin, L. Ohberg, and S. Sethuratnam. 2016. Biotechnology or organic? Extensive or intensive? Global or local? A critical review of potential pathways to resolve the global food crisis. <i>Trends in Food Science &amp; Technology</i> 48: 78-87.</li> <li>• Wittman, H., M. J. Chappell, D. J. Abson, R. Bezner Kerr, J. Blesh, J. Hanspach, I. Perfecto, and J. Fischer. 2017. A social-ecological perspective on harmonizing food security and biodiversity conservation. <i>Regional Environmental Change</i> 17:1291-1301.</li> <li>• Meadows, D. 1998. Indicators and information systems for sustainable development. <i>The Sustainability Institute. Chapters 1-4, pages 1-21.</i></li> <li>• Cabell, J. F., and M. Oelofse. 2012. An indicator framework for assessing agroecosystem resilience. <i>Ecology and Society</i> 17.</li> <li>• Walsh-Dilley, M., W. Wolford, and J. McCarthy. 2016. Rights for resilience: food sovereignty, power, and resilience in development practice. <i>Ecology and Society</i> 21.</li> <li>• Lopez-Ridaura, S., Masera, O., and M. Astier. 2002. Evaluating the sustainability of complex socio-environmental systems. The MESMIS framework. <i>Ecological Indicators</i> 2: 135-148.</li> <li>• Schipanski, M.E., MacDonald, G.K., Rosenzweig, S., Chappell, M.J., Bennett, E.M., Bezner-Kerr, R., Blesh, J., Crews, T., Drinkwater, L.E., Lundgren, J., and C. Schnarr. 2016. Realizing resilient food systems. <i>BioScience</i>. doi:10.1093/biosci/biw052.</li> <li>• Explore: <a href="http://www.sustainablemeasures.com/indicators">http://www.sustainablemeasures.com/indicators</a></li> </ul>