Instructor: Dr. Douglas Jackson-Smith
Contact Information: jackson-smith.1@osu.edu, office phone: 330-202-3540
Classroom/time: Kottman 245; T and R, 12:45 – 2:05 pm
Office Hours: T/R 10:45-12:15 Kottman 469A

Course Description
This course will examine the sustainability of various types of agricultural and food systems. We begin by considering alternative definitions of sustainability, and become familiar with critiques of the sustainability performance of mainstream US and global agri-food systems. We then engage in a broad review of the scientific literature on a range of both incremental and transformative approaches to improving the sustainability of these systems, paying close attention to both environmental, social and economic outcomes. While the primary focus of the material will be on US agriculture, we will include readings and discussions about the sustainability performance and challenges of the broader US and global food systems.

Objectives
• Be able to define ‘sustainable agriculture’ from multiple perspectives.
• Understand and evaluate scientific evidence for the performance of alternative approaches to improving the sustainability of agriculture and food systems.
• Synthesize evidence from multiple sources to highlight the complexities and tradeoffs associated with efforts to improve the sustainability of agriculture and food systems.

Expectations and Goals
In this course, you will be provided with opportunities to improve your skills in:
• Communicating effectively both orally and in writing.
• Thinking critically, analytically, and logically about sustainability issues or problems.
• Gathering and critically evaluating scientific research on farming and food systems.
Texts:

REQUIRED TEXTS:


SUPPLEMENTAL READINGS – Numerous reports and peer-reviewed journal articles will be posted on our course Carmen Canvas site to supplement readings from the core texts.

All students will be expected read everything that is listed in the syllabus below. For the on-line readings, you can either read it on your screen or (what I do) print it out and then read it in the usual fashion. Be sure to leave yourself time to access, print and read the on-line readings well before each class period.

Electronic Messaging

I will be posting announcements, hints, and reminders about this course to students on our CARMEN CANVAS website on a regular basis. PLEASE BE SURE YOU CHECK IT ON A DAILY BASIS. You can contact me there – or for fastest service, email me directly. As noted above, my email address is: jackson-smith.1@osu.edu.

Expectations

Students will be expected to keep up with the assigned readings for each class period and keep detailed reading notes. The reading load is not excessive (for an upper division class), but does require you to plan ahead to get it done. If you want to do well in this class, you must take the readings seriously, take notes, and come prepared to discuss the readings each class session.

Class sessions will take a seminar format, with guided group discussions of the materials and other experiences related to the class. I will periodically use brief lectures to provide additional background material and supplement what you are reading.
Course Requirements and Grading

The classroom periods will primarily focus on the discussion of the required readings, with supplemental provided from lectures and guest presentations. All assignments and readings will be completed outside class in order to facilitate in class discussion. Grades will be assigned based on student performance across the semester on several different assignments, which are detailed below.

Class Participation (20%)

Participation will be judged based on three criteria: 1) consistent attendance and clear preparation 2) active engagement in the class discussion 3) quality of classroom participation.

Midterm (25%)

A take home midterm exam will be conducted before fall break to test students’ critical thinking and integration skills. The exam will consist of a number of short answer or long form essay questions designed to synthesize the concepts covered to that point in the class. Both the readings, class discussions, and lecture material will figure prominently on exams. You will have to type your answers to exam questions and submit them on time to get full credit.

Midterm 2 (20%)

A 5-10 (10-15)1 page double-spaced synthesis paper will be due before the Thanksgiving break. This paper should present a thoughtful summary response to the question: Are incremental approaches to improving the sustainability performance of mainstream agriculture sufficient, or is a transformation of the farm and food system required to reach sustainability? Your arguments should draw primarily upon required course readings, but can be supplemented by references to additional peer-reviewed literature you find on your own.

Final Written Reports on Sustainability Controversies (30%)

Each student will be expected to write an 8-12 (15-20)1 page research report or literature review summarizing key arguments and scientific evidence to address one of several controversial topics related to agricultural sustainability. These papers should include references to at least 8 (16)1 new scientific peer reviewed publications, and the analysis should address multiple aspects of agricultural sustainability and provide a reasonable and balanced summary of arguments on both sides of the question. A list of possible topics is included below, but additional topics are possible with the consent of the instructor. An outline and brief prospectus of the report will be due October 10. I will review this prospectus with you before you start writing. If you have time to get me a draft of the final report by December 1. I will provide feedback that I expect you to consider and utilize in revising the paper prior to the final submission (due December 12th).

Team Presentations of Final Reports (5%)

Students with reports/reviews on similar topics will be expected to collaborate to pull together a single 10 minutes presentation for the class on each question/topic. These presentations should synthesize the arguments pro and con for each question, and review the different (or similar) conclusions drawn by each analysis. Presentations will take place during our designated final exam slot (Tuesday, December 12, 2:00-3:45 pm).

1 All page ranges or counts in parentheses apply to graduate students only. All page limits reflect double spaced, 1” margins, and are exclusive of a list of properly formatted references.
CONTROVERSIAL TOPICS IN AG & FOOD SUSTAINABILITY

A. Can genetically modified crops improve sustainability?
B. Are biofuels an example of sustainable agriculture?
C. Is there a conflict between food security & sustainable agriculture?
D. In what ways does ‘sustainable’ seafood meet the definition of sustainable agriculture?
E. Are pasture-raised beef or dairy cows more sustainable than those raised in confinement systems?
F. Does eating less meat improve sustainability?
G. Is eating more local food more sustainable?

H. Other topics – propose and get instructor’s approval in advance!
Detailed weekly list of readings and assignments (subject to revision)

T  Aug 22  Introduction & Overview
  • No reading assignments
  • Background readings on Canvas – for reference purposes
    o Basiago 1995 (11 pgs)
    o Goodland and Daly 1996 (12 pgs)
    o Magis & Shinn 2009 (23 pgs)

R  Aug 24  Defining Sustainable Agriculture (43)
  • NAS 2010 – Ch 1 “Understanding Agricultural Sustainability” (24 pgs)
  • Pretty 2008 “Agricultural Sustainability: Concepts, principles & evidence” (19 pgs)

T  Aug 29  Sustainability Challenges in Agriculture (32)
  • Read: NRC 2010: “A Pivotal Time in Agriculture” from Toward Sustainable Agricultural Systems in the 21st Century; pp. 43-75 on CANVAS and also on web at http://www.nap.edu/download.php?record_id=12832#

R  Aug 31  Climate Change and Agricultural Sustainability (36)
  • Read selections from Walthall et al. 2012
    o Executive Summary, pp. 1-8
    o Ch 3 “Overview of Changing Climate”, pp. 23-34
    o Ch 4 “Climate Change Science & Agriculture” pp 35-52

T  Sept 5  Sustainability of Livestock Production
  • All read
    o Menzi et al 2010 "Impacts of intensive livestock production and manure management on environment" (21 pgs)
  • Assigned to graduate students who will each read and prepare 10 minute syntheses to present to class:
    o A: Asner & Archer 2010 “Livestock and global carbon cycle” (14 pgs)
    o B: Galloway et al 2010 “The impact of animal prod systems on nitrogen cycle” (14 pgs)
    o C: Deutsch et al 2010 “Water-mediated ecological consequences of intensification and expansion of livestock production” (14 pgs)
    o D: Toutsin et al 2010: “Impacts of extensive livestock systems on terrestrial ecosystems” (32 pgs)

R  Sept 7  Improving Environmental Sustainability – Incremental Approaches
Row Crop Systems (Tillage, Cover Crops, Crop Rotations)
  • All Read:
    o NRC 2010, pp. 83-105 (22 pgs)
  • Assigned to graduate students who will each read and prepare 10 minute syntheses to present to class:
    o F: UCS 2012 Rotating Crops (12 pgs)
    o G: UCS 2013 Cover Crops (4 pgs) and Singer et al 2007 (6 pgs)
    o H: UCS 2017 Soil into Sponges (15 pgs)
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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
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<tbody>
<tr>
<td>Sept 12</td>
<td>Improving Environmental Sustainability – Incremental Approaches</td>
<td>Nutrient &amp; Water Quality Management (BMPs, Water Use/Mgt) (36)</td>
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<td>- NRC 2010, pp. 117-135</td>
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<td>- IOM/NAS 2015 Nitrogen Dynamics, pp. 335-352</td>
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<td>- Frankenberger 2012 “Drainage Water Mgt” (1 pg)</td>
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<td>Sept 14</td>
<td>Improving Environmental Sustainability – Incremental Approaches</td>
<td>Weed and Pest Mgt (22)</td>
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<td>- NRC 2010, pp. 135-150</td>
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<td>- UCS 2013 Superweeds (7 pgs)</td>
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<td>Sept 19</td>
<td>Improving Environmental Sustainability – Incremental Approaches</td>
<td>Livestock Production (19)</td>
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<td>- NRC 2010, pp. 150-161</td>
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<td>- IOM/NAS 2015 Comparing Hen Housing (pp. 353-360)</td>
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<td>Sept 21</td>
<td>Improving Environmental Sustainability – Incremental Approaches</td>
<td>Livestock Production – continued (31)</td>
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<td>- All Read</td>
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<td>- Powell et al 2012 “Trends in the Dairy Industry and their Implications for Producers and the Environment” (pp. 115-136)</td>
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<td>- Steinfield Ch 16: “Responses on Environmental Issues” (pp 311-321)</td>
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<td>Sept 26</td>
<td>Social and Economic Sustainability: Farm Households</td>
<td>(27)</td>
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<td>- All Read:</td>
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<td>- NRC 2010, Ch 4, pp. 189-201</td>
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<td>- IOM/NAS 2015 &quot;Social and Economic Effects of the US Food System&quot; (Ch 5 pp 167-182 only)</td>
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<td>Sept 28</td>
<td>Improving Social and Economic Sustainability: Community &amp; Farm Labor</td>
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<td>- All Read</td>
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<td>- NRC 2010, Ch 4, pp. 202-206</td>
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<td>- “New Jobs, New Workers, and New Inequalities” (J. Harrison and S. Lloyd, 2013, pp. 281-301)</td>
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<td>Oct 3</td>
<td>No class: work on take home exam #1</td>
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<td>Oct 5</td>
<td>Take home exam #1 due; brainstorm term projects in class</td>
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<td>Oct 10</td>
<td>Term project prospectus due; discuss in class</td>
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<td>Oct 12</td>
<td>NO CLASS MEETING – OSU FALL BREAK</td>
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T  Oct 17  TRANSFORMATIONAL APPROACHES: Organic Farming
   • All read (24)
     o NRC 2010: Ch 5: Examples of Farming System Types for Improving Sustainability; pp 221-233 only
     o Reganold and Wachter 2016 “Organic Agriculture in the 21st Century” (8 pgs)
     o Bergstrom and Kirschmann 2016 “Are the claimed benefits of organic agriculture justified?” (2 pgs)
     o Reganold and Wachter 2016 “Reply to B&K” (2 pgs)
   • Grad Students read and present:
     o Lorenz and Lal 2016 “Environmental Impact of Organic Farming” (54 pgs)

R  Oct 19  TRANSFORMATIONAL APPROACHES: Social Sustainability & Org Farming
   • All Read (30)
     o Guthman Ch3 “Organic Farming: Ideal Practices and Practical Ideals” pp. 42-60
     o Shreck et al 2006 “Social sustainability, farm labor, and organic agriculture: Findings from an exploratory analysis.”

T  Oct 24  TRANSFORMATIONAL APPROACHES: Perennial Crops
   • All Read
     o NRC 2010: Ch 5: Examples of Farming System Types for Improving Sustainability; pp 249-253 only
     o Glover and Reganold 2010 “Perennial grains: food security for the future.”
   • Grad Students read and present
     o Culman et al. 2013 “Soil and water quality rapidly responds to the perennial grain, kernza wheatgrass.”
     o Olmstead and Brummer 2008 “Benefits and barriers to perennial forage crops in Iowa”

R  Oct 26  TRANSFORMATIONAL APPROACHES: Alternative Livestock
   • All Read:
     o NRC 2010: Ch 5: “Examples of Farming System Types for Improving Sustainability” pp 233-249 only

T  Oct 31  FOOD SYSTEM SUSTAINABILITY
   • What is a Food System? Qualities of Sustainable Food Systems
   • All Read
     o IOM/NAS 2015 “Overview of the US Food System” (pp. 31-75)

R  Nov 2  PERFORMANCE OF FOOD SYSTEM: Health & Food Safety
   • All Read
     o IOM/NAS 2015 “Health Effects of the US Food System” (pp. 85-117)
**T Nov 7**  PERFORMANCE OF FOOD SYSTEM: Economic and Social  
- All Read  
  - IOM/NAS 2015 "Social and Economic Effects of the US Food System" (pp 182-210 only).

**R Nov 9**  ALTERNATIVE FOOD SYSTEMS: Local Foods  
- All Read:  
  - McBride 2009 “Exploring common ground: community food systems and social sustainability.” (17 pgs)  
  - Hinrichs 2000 “Embeddedness and local food systems” pp 295-303  
- Graduate Students select & synthesize/present:  
  - Ostrom 2007 “Community Supported Agriculture as Agent for Change”  
  - DuPuis et al, “Just Food?” (pp. 283-302)

**T Nov 14**  GLOBAL DIMENSIONS: Sustainable Intensification  
- All read  
  - Tilman et al 2011, “Global food demand and the sustainable intensification of agriculture.” (6 pgs)  
  - Pretty et al 2011, “Sustainable Intensification in African Agriculture” (20 pgs)

**R Nov 16**  GLOBAL DIMENSIONS: Conservation Agriculture  
- All read  
  - Andersson and D’Souza 2014 “Conservation Agriculture Adoption in Africa” (17 pgs)  
- Graduate student select & synthesize/present:  
  - Kassam et al 2009 “Conservation Agriculture Sustainability and Uptake” (29 pgs)

**T Nov 21**  NO CLASS: Synthesis paper (midterm #2) due

**R Nov 23**  NO CLASS (THANKSGIVING BREAK)

**T Nov 28**  DRIVERS OF CHANGE – MARKETS  
- NRC 2010: “Drivers and Constraints Affecting Transition to Sustainable Farming Practices” (pp 271-291)

**R Nov 30**  DRIVERS OF CHANGE – POLICY & SCIENCE  
- Reganold et al. 2011 “Transforming US Agriculture”  
- NRC 2010: “Drivers and Constraints Affecting Transition to Sustainable Farming Practices” (pp 291-336)  
- Drafts of final projects due (if you want feedback)

**T Dec 5**  SOLUTIONS: Role of Individuals, US Agriculture, Etc.  
- Feeding 9 billion people: [https://www.youtube.com/watch?v=raSH1AqV8K9c](https://www.youtube.com/watch?v=raSH1AqV8K9c)  
- Carolan 2012 “Avoiding the ‘traps’ in agrifood studies” (Ch 12, pp. 271-289)
T    Dec 12    Final Project Presentations & Report Submission
• 2:00pm-3:45pm
Grading:
Grades are based on cumulative points for the various required activities in the class (participation, written assignments, and exams). Based on percent of total points, students will be assigned grades using the following ranges:

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<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tr>
<td>93-100 %</td>
<td>A</td>
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<tr>
<td>87-89.9 %</td>
<td>B+</td>
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<tr>
<td>77-79.9 %</td>
<td>C+</td>
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<tr>
<td>67-69.9 %</td>
<td>D+</td>
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<td>Under 60 %</td>
<td>F</td>
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<td>90-92.9 %</td>
<td>A-</td>
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<td>83-86.9 %</td>
<td>B</td>
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<tr>
<td>73-76.9 %</td>
<td>C</td>
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<td>60-66.9 %</td>
<td>D</td>
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<tr>
<td>80-82.9 %</td>
<td>B-</td>
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<tr>
<td>70-72.9 %</td>
<td>C-</td>
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Extra Credit:
Extra Credit is not given. If you show significant improvement in course performance over the course of the semester, you will be given the benefit of the doubt in the final grade. That is, if your first assignments were D or C level and later work is A or B level, I will assign greater weight to the later work if you are near a grade cutoff point.

Missing Class:
Do not miss class (if at all possible). **If you are unable to come to class, you must let me know in advance of the class period and have a good reason for missing class to be considered excused.** A good idea is to leave me a voice mail message or send me an email message before the start of the class period. If extreme emergencies prevent you from giving me advance notice of your absence, I must be informed of your reasons for missing class as soon as possible after the fact. If you miss a class without an excused absence, your class participation points (and final grade) will suffer.

Make Ups:
Only students who miss class with an excused absence are allowed to make up work. Missing deadlines for take home exams and written assignments without the advance approval of the instructor will not be tolerated and late exams and papers will dropped at least one full letter grade. Plan ahead accordingly.

Incompletes:
University policy states that incomplete grades are not to be given for poor performance in class, but only for exceptional circumstances. Do not ask for an incomplete if you simply failed to plan effectively to complete all course requirements. All incompletes MUST be cleared with me before the end of the last regular class period (December 5, 2017). All approved incompletes must be completed WITHIN 10 WEEKS of the end of the semester. You will be expected to sign a contract specifying the terms of the incomplete grade.

Questions about Grades
I will not discuss grades over the phone. Students have 10 days from posting of scores for an exam or assignment to review and make a case for the points they feel they should have received.

Students with Disabilities
Any student who feels they may need an accommodation based on the impact of a disability will need to register with the OSU Office of Disability Services (ODS) and reach out to the instructor individually to discuss specific needs and accommodations. Students are responsible for proactive communication regarding these accommodations and retroactive accommodations may not be possible. ODS is located in Baker East and can be contacted at (614) 292-3307 (voice), (614) 292-0900 (TDD) and online at
www.osu.edu/units/ods. I am very supportive of the Americans with Disabilities act; if you have a documented disability, please let me know how I can assist you in succeeding in this course.

**Classroom Civility**

I expect your full attention when we meet in class. Differing viewpoints are encouraged, but personal attacks or disrespectful behavior will not be tolerated. Respect for all is expected, including: (a) treating everyone with civility, including listening without interrupting; (b) avoiding insulting terms and stereotypes when describing people; (c) attempting to understand other people’s behavior; (d) critiquing ideas rather than the person holding them.

This is an upper division/graduate class, and I expect that you understand disruptions are not conducive to learning. Please avoid disruptive behaviors such as chatting with others, reading newspapers in class, playing around with electronic devices, etc. Cell phones need to be turned off at the beginning of class, and texting is strictly prohibited. I strongly prefer that you do not use a laptop for taking notes; if you choose to do so, you will be expected to use your laptop only for class purposes, and will agree not to check email, surf the web, or otherwise disengage from classroom activities. Violations of this policy will result in the loss of laptop privileges. Coming to class late and leaving early are particularly distracting and should be avoided. Please do not leave class early unless you have made prior arrangements with me. If someone around you is being disruptive, please ask them, in a constructive way, to quit the distracting behavior.

**Academic Dishonesty**

Acts of academic misconduct will not be tolerated in this class. Examples of academic misconduct include, but are not limited to, cases of plagiarism and dishonest practices in connection with examinations and class exercises. Plagiarism includes knowingly representing, by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgement. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials. See Code of Student Conduct: Rule 3335-31-02. This and other rules can be found in the Resource Guide for Students or in the back of the Student Telephone Directory. If you have a question about approaches and procedures that might constitute academic misconduct, see the instructor.

**Individual effort is expected on all assignments.** Although you may work together on your papers and take home exams, **under no circumstances should all or any part of the assignment be copied from or modeled directly on someone else’s work.** All assignments must be your own work and your own original words. If you are citing, quoting, or deriving some of your material from published sources, be sure to use appropriate citations and references.

Students who participate in academically dishonest activities – cheating on exams, copying other students’ work, plagiarizing work from other published work or the internet, etc. -- will be severely punished. Penalties include warning or reprimand, grade adjustment, or other penalties imposed at the Dean’s discretion, including probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, referral to psychological counseling, and other appropriate disciplinary actions.

**Title IX – Statement**

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu"