

## **SUST 501: Sustainability Perspectives & Methods**

4 credits

Spring 2017

Thursdays 9:40 am – 12:30 pm, 4 Morrill Hall

### **Prof. Vanessa Levesque**

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Office Hours: Mondays 1-2 pm, Wednesdays 10-11 am, and by appointment

**Text:** Readings provided by instructor on Canvas

**Prerequisite:** SUST 401: Surveying Sustainability

### **Course Overview:**

SUST 501 is the intermediate class for the Sustainability Dual Major. The overall objective of SUST 501 is to delve more deeply into the multiple ways in which we measure, assess and use concepts of sustainability. Students who successfully complete SUST 501 will be prepared to take the final capstone course in the dual major (SUST 750).

The first part of SUST 501 will explore sustainability science and practice, and explore the cross-cutting perspectives that define these fields. Students come to the course with a foundation in what constitutes sustainability as a topic. SUST 501 extends this knowledge to delve into what sustainability science and action entails from academic and practitioner perspectives. As such, we begin by establishing the cross-cutting concepts and perspectives that run throughout sustainability science including interdisciplinarity, systems thinking, and values.

The second part of the course builds on this foundational knowledge to delve more deeply into interdisciplinary methods that may be employed in sustainability science and practice. We explore the collaborative nature of transdisciplinary efforts, look at how boundary work can bridge gaps between different ways of knowing, delve into one type of model – Life Cycle Sustainability Assessment, explore the potential of citizen science to co-produce knowledge, and analyze how to collaboratively develop sustainability solutions.

Throughout the course we bring in the frameworks and tools provided by multiple disciplines in the humanities, social sciences, earth and environmental sciences, as well as technical science and engineering. We will take field trips and bring in expert guest lecturers to provide current context.

### **Learning Objectives:**

- Define sustainability science as a field
- Understand the difference between monodisciplinary and inter-disciplinary perspectives
- Explain and apply a systems perspective to sustainability challenges
- Define and explain the role of partners in transdisciplinary projects.

- Describe the meaning and process associated with partnership-driven sustainability research
- Define co-production of knowledge and explain its importance in relationship to sustainability research and action
- Identify and explain different tools that can be used in knowledge co-production
- Understand the purpose and challenges of solutions-driven sustainability projects
- Understand several methods that can be used in sustainability science and practice
- Explore the connections between knowledge and action in developing sustainability solutions
- Enhance a cohort of SUST dual majors through interdisciplinary exploration of sustainability

**Office of Disability Services:** The University is committed to providing students with documented disabilities equal access to all University programs and facilities. If you have a disability requiring accommodations, you must register with Disability Services for Students (DSS) at 201 Smith Hall, 603.862.2607 or [disability.office@unh.edu](mailto:disability.office@unh.edu). If you have received Accommodation Letters for this course from DSS, please provide me with that information privately and as soon as possible so that we can ensure timely implementation of those accommodations.

**Academic Honesty:** Please review the UNH Academic Honesty Policy: <https://www.unh.edu/student-life/handbook/academic/academic-honesty>. The *American College Dictionary* defines plagiarism as “Copying or imitating the language, ideas, or thoughts of another author and passing off the same as one’s original work.” Paraphrases, even if not exact quotations, must have the appropriate citation. Exact quotations must have quotation marks and the appropriate citation. Using the Internet for research is allowed, but plagiarizing its resources is not allowed; all references must be cited. As a general rule, *if you have any doubts, give credit to the source*; if you have any questions, talk to the instructor.

**Electronic Devices Policy:** Per section 04.213 of the *Student Rights, Rules, and Responsibilities Handbook*, cell phones, music players, or any other type of electronic device may not be used during class, without specific prior approval. Please make sure your phone is set to silent mode or turned off. Texting or any other messaging is strictly forbidden. Laptops may be used for note-taking and reference to electronic class readings; laptops used for any other purposes, will result in you losing the privilege of using your laptop during class.

### **Course Requirements & Grading:**

Grades are distributed as follows:

- ✓ Participation & Engagement (14 classes x 10 pts each): 140 pts
- ✓ Feld Trip Reflections (4 x 50 pts each): 200 pts
- ✓ Contributions to Sustainability Methods Reader: 400 pts total (see breakdown below)
- ✓ Final class poster session: 110 points

TOTAL POSSIBLE POINTS: 850

Extra credit Blog Posts: You can earn up to 10 extra points

**Participation & Engagement** (140 pts total): This class meets once a week and depends on student participation; if you miss class or are not prepared, you miss a significant amount of content. To encourage participation, there will be homework assignments and/or in-class discussions and other

activities. Your syllabus states what you need to do to prepare for and participate in each class. Each class session you can earn up to 10 points per class. These points are earned by: reading materials and being prepared for class, completing and submitting any homework assignments (including assignments due after class), participating in class discussions, and participating in any in-class activities.

If you have an excused absence (e.g. significant illness, official intercollegiate events, personal emergencies), let me know as soon as possible and we will schedule a make-up assignment. No makeup assignments are provided for unexcused absences and you will receive a zero for your participation grade for that day.

**Field Trip Reflections** (200 points) – We have four field trips scheduled for the semester (Wagon Hill Farm; Tides to Storms; Spruce Hill aquifer recharge; CAW meeting). For each one, you will write a 500-800 word blog entry that identifies the key features of the field trip, applies knowledge learned from class to that case, and provides your own reflection on what you observed. You will have 1 week after each field trip to complete the reflection (due 9/28, 10/12, 11/9, and 12/7). Each reflection entry is worth 50 points. A separate document will provide more details about expectations and a grading rubric for these reflections.

If you are a sustainability dual major and continuing on to take SUST 750 before you graduate, the blog that you start in this class will become part of an ePortfolio that compiles, makes sense of and showcases your accumulated sustainability experience and knowledge.

**Contribution to a Sustainability Methods Reader** (400 points) –The bulk of your effort and work this semester will go into creating a primer on sustainability methods and perspectives for future SUST 501 students or others entering a professional career working on sustainability challenges. You will be work on this in groups to mirror the process used in many sustainability projects. By the end of this semester, you will have written, as a class, a reader on sustainability methods and perspectives with examples and references. To help keep you on track, I've provided several intermediate assignments. Additional guidance will be provided for each of these:

1. Write group norms and a group work plan (what you will get done by when) (25 pts) (*due 9/14*)
2. Create an outline of topics for your chapters, with a list of a few related references to use (75 pts) (*due 10/5*)
3. Write a first draft for your chapters, drawing on at least 3 references (100 pts) (*due 10/26*)
4. Conduct peer review of another group's first draft (50 pts) (*due 11/2*)
5. Revise your first draft into your final submission. Respond to comments your group receives: Make changes or justify why you didn't. Make overall revisions. (150 pts) (*due 11/30*)

**Poster Session** (110 points) – On the last day of class, you will have an opportunity to present your work to the class and provide feedback to others. Each workgroup will create a poster summarizing their contribution to the sustainability methods and perspectives primer. Each group will have 5

minutes to present an overview of their poster, and then 5 minutes to answer questions. Your grade will be based on your group's poster and presentation (100 pts) as well as your individual contribution to questions and discussions about other posters (10 pts).

**Extra credit blog posts** (10 points) – Write 300-500 word blog posts any time during the semester. The posts can be about anything related to sustainability. Example topics include, but are not limited to reflections on the process used in this class, on specific content learned in this class, about how topics in this course relate to material learned in 401 or in your other classes, and what this class has made you think about your major or career. You can earn 1 point for each post, up to a total of 10 points. The posts must be written at least 5 days apart from each other (i.e., you cannot do all your posts in the last week or two of the semester!). *I highly recommend doing these posts!* They are a great way to reflect on bigger ideas, and they will provide additional content for your portfolio that you can share with prospective employers.

### Schedule of course readings, assignments and exams

Date	Topic	Readings & Assignments due at start of class
8/31	Introduction to course	
9/7	Sustainability Science overview	Assignment: <ol style="list-style-type: none"> <li>Read:               <ul style="list-style-type: none"> <li>Grant, Kristen. The value of diverse types of knowledge. Maine Sea Grant.</li> <li>New Scientist articles (each 1 pg): What is Knowledge? Is scientific knowledge special?</li> </ul> </li> <li>Review the articles you did not read in class:               <ul style="list-style-type: none"> <li>Kates et al. 2001. Sustainability Science. Science.</li> <li>Miller, Reconstructing Sustainability Science, Chapter 2: A Science for Sustainability (<i>p. 14-19 only – stop at 'Science, technology and society'</i>)</li> <li>Clark. 2007. Sustainability Science: A room of its own. PNAS 104(6) (<i>First page only</i>)</li> </ul> </li> <li>Why is it important to think about different types of knowledge when working on sustainability issues?</li> </ol> In class: <ul style="list-style-type: none"> <li>11:30 – 12:30: Research strategies at Dimond Library rm. 235 with Megan Bresnahan</li> </ul>
9/14	Phase 1: Putting together a team: Interdisciplinary and transdisciplinary approaches	Assignment: <ol style="list-style-type: none"> <li>Read:               <ul style="list-style-type: none"> <li>O'Neill (2011). Open your mind to interdisciplinary research. New Scientist.</li> <li>Lang, D. J., et al. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. <i>Sustainability Science</i>, 7 (<b>LEAVE YOURSELF TIME TO READ!</b>)</li> </ul> </li> </ol>

2. Complete the Self-explanation questions for the Lang et al. paper
3. Due: Group norms and workplan

In class:

- 12:00 – 12:30: Ken Mitchell - How to set up your ePortfolio blog in WordPress (bring laptop to class!)

9/21	Wagon Hill Farm Field Trip	Led by Kirsten Howard
9/28	Phase 1: Team building; Collaborative processes	<p>Assignment:</p> <ol style="list-style-type: none"> <li>1. Read: <ul style="list-style-type: none"> <li>• London, S. Building Collaborative Communities. <a href="http://www.scottlondon.com/articles/oncollaboration.html">http://www.scottlondon.com/articles/oncollaboration.html</a></li> <li>• University of Kansas Community Tool Box, Chapter 7, Section 8: Identifying and Analyzing Stakeholders and their Interests (<a href="http://ctb.ku.edu/en/table-of-contents/participation/encouraging-involvement/identify-stakeholders/main">http://ctb.ku.edu/en/table-of-contents/participation/encouraging-involvement/identify-stakeholders/main</a>)</li> </ul> </li> <li>2. Does 'the public' need to be involved in a process for it to be considered collaboratory or TDR? Explain your answer.</li> <li>3. Due: Wagon Hill Farm field trip reflection blog post</li> </ol>
10/5	Tides to Storms field trip Led by Julie LaBranche	<p>Assignment</p> <ol style="list-style-type: none"> <li>1. Read: <ul style="list-style-type: none"> <li>• From Tides to Storms: Preparing for New Hampshire's Future Coast (read executive summary, skim rest of report)</li> </ul> </li> <li>2. Due: Outline and list of references for your topic/chapter</li> </ol>
10/12	Phase 2: Knowledge coproduction	<p>Assignment:</p> <ol style="list-style-type: none"> <li>1. Read: <ul style="list-style-type: none"> <li>• Beier, P. et al. 2016. A How-to guide for the co-production of usable science. Conservation Letters. 10(3)288-296</li> </ul> </li> <li>2. Complete the Self-explanation questions for the Beier et al. paper</li> <li>3. Due: Tides to Storms field trip reflection blog post</li> </ol>
10/19	Phase 2: Knowledge coproduction - Bridging boundaries; GIS analysis	<p>Assignment:</p> <ol style="list-style-type: none"> <li>1. Read: <ul style="list-style-type: none"> <li>• McGreavy et al. 2013, Addressing the complexities of boundary work in sustainability science through communication. Sustainability 5, 4195-4221. <b>SECTION 2 ONLY</b> (description of boundary concepts).</li> </ul> </li> <li>2. Complete the Self-explanation questions for Section 2 of the McGreavy et al. paper</li> <li>3. Why is boundary work important for the co-production of</li> </ol>

knowledge?

In class:

- 9:40 – 11:00: Mike Palace and Michael Routhier GIS (Morse Hall)

10/26 Phase 2: knowledge  
co-production -  
citizen science

Assignment:

1. Read:
  - “What is citizen science”, scistarter website:  
<https://scistarter.com/citizenscience.html>
2. Search for citizen science projects in New Hampshire at:  
<http://newengland.stewardshipnetwork.org/citizen-science>  
and describe one project that you found. How do you think  
citizen science could be part of the co-production of knowledge  
in sustainability efforts?
3. Due: First draft of sustainability methods reader chapter

In class:

- Caitlin Peterson and Malin Clyde to lead citizen science class.

11/2 Case study: Spruce  
Hole & Durham’s  
Water Supply

Led by Mike Metcalf

Assignment:

1. Due: Peer review of another group’s chapter.

11/9 Phase 2: Knowledge  
coproduction -  
Systems Analysis

Assignment:

1. \*TBD by guest lecturer
2. Due: Spruce Hole field trip reflection blog post

In class:

- Dr. Nicole Tichenor to lead session on Life Cycle Analysis

11/16 Phase 3: Connecting  
Knowledge to Action;  
Developing solutions

Assignment:

1. Read:
  - Matson, Clark and Andersson. 2016. “Linking Knowledge  
with Action”, Chapt. 5 in Pursuing Sustainability (p. 105-123;  
stop at “The central role of boundary work.”)
2. Complete the Self-explanation questions for the chapter

11/30 Field trip -  
Coastal Adaptation  
Workgroup Meeting

Attend CAW Meeting (DES office, Portsmouth) 9:30 – 11:30

Assignment:

1. Due: final submission of your chapter(s) for the Sustainability  
Perspectives & Methods reader

12/7 Poster Session;  
course wrap-up

Assignment:

1. Due: CAW field trip reflection blog post
2. Poster for poster session