

# Ecosystem Services

NR 342 / NR 295, Fall 2021

Waterman 458, Tuesdays 1:15 - 4:15 PM

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**Office Hours:** Thursdays 2:00 – 3:00 (in person and Teams)

Welcome to Ecosystem Services. This graduate course will consider, from a variety of angles, the economic and other benefits nature provides to people. We'll examine the ecological foundations of quantifying ecosystem services, the economics of valuing them, the practicalities of putting them to use within government, NGO, and business decisions, and the justice & equity issues that come up throughout. Ecosystem services are a hot topic these days, and somewhat of a bandwagon. They are also a useful way of understanding the links between social and ecological systems, as well as a good example of cutting-edge science and real-world application truly advancing together.

## Learning objectives

Through this course, students will:

- gain an interdisciplinary understanding of ecosystem services, connecting ideas from natural sciences, social sciences, ethics, and management.
- become familiar with pioneering efforts to quantify ecosystem services and put them to practical use.
- sharpen critical thinking skills by reading and critiquing primary literature
- develop their own ideas about frontier issues and promising next steps in this fast-moving field.

## Course modality and software platforms

This will be an IN PERSON class, following current UVM guidance and policies. Given vaccination rates, indoor masking, and the number of students, I am confident we can meet safely. I therefore expect all students to attend classes in person. If you need to quarantine or isolate for COVID-19, we can discuss attending class sessions remotely, but I don't plan on a hybrid approach as a matter of course. If COVID worsens and UVM policies change, or if I need to quarantine or isolate, we will move the course online via Teams.

I will also use Teams to share all course readings and other resources, and to have you submit some assignments. I will not use Blackboard for this course – we do not need its functionality.

## Inclusive classroom

I intend to create an inclusive learning environment, where different points of view are celebrated and examined with curiosity and respect. I aim to ensure that students of all backgrounds and perspectives feel welcome and able to participate

fully. I also intend to include a variety of perspectives in the readings and discussions and materials.

I recognize I have a particular and highly privileged point of view, as a straight white man, an American, and a natural scientist. Ecosystem services is a fundamentally interdisciplinary field, involving physical, ecological, social, cultural, and equity dimensions. That is what makes it so fascinating and rich. I will work hard to cover this range of dimensions, but I recognize the biases in my expertise and interests. I welcome your feedback on making this course as inclusive as possible.

For more on my approach to diversity, see the stated [commitment](#) from our research lab. And for additional diversity and inclusion resources, see UVM's diversity [webpages](#).

### **Course design**

This is a graduate course. That means students will take an active role in the learning we do as a group. We will emphasize reading and discussion over lectures. And we will examine scientific and policy issues that are unsettled and changing at the moment. Most of our readings will be from the primary literature, so students can become familiar with how this field is advancing, and with the range of voices working to advance it. Students will take turns leading discussion of a key paper or case study. The major assignment will be a proposal that builds from the current state of knowledge and practice to propose a compelling new contribution.

*Reading and discussion.* Our knowledge of ecosystem services is advancing through academic journals, government documents, NGO reports, popular magazines, and podcasts. We'll read (or listen to) all of these in this course, but we'll emphasize peer-reviewed journal articles because they capture the leading edge of research and debate. We will also use a book: Fisher, et al. (2014) *A Field Guide to Economics for Conservationists*, which introduces many of the economic concepts we'll cover (available [here](#)). It is on reserve at the library and available at the bookstore (soon). Readings will form the basis of in-class discussions on the broader topics they raise. I expect everyone to come to each class having read *all* readings.

*Student-led discussions.* Each student will lead one or more discussions of a specific paper or case study during the semester. In contrast to other class meetings, the focus for these sessions will be on that particular paper or case. For papers, we will discuss and critique their scientific merit, rigor, novelty, and policy relevance. For case studies, we'll discuss their design, science foundations, effectiveness, and scalability. Student leaders will introduce the paper or case and then frame and lead discussion. For the first few weeks, leaders must meet with me the week before they lead class, to discuss the paper and their plans for leading.

*Proposals.* Each student will develop a proposal as a final project. These can be a research proposal, pitching the next steps to advance our scientific understanding; a policy proposal, pitching how ecosystem services should be incorporated into a specific public policy arena; or a business proposal, pitching how a company can use ecosystem services to address business opportunities or risks.

Why a proposal? Because good ones force you to synthesize current knowledge, apply it to a specific context, identify where advances can be made, and pitch a credible, well-founded, doable project. It's also good practice; academics, NGO staff, government personnel, and those in private sector all write proposals to advance their ideas. Finally, perhaps it will set you up for a thesis project!

Students will submit a short pre-proposal at mid-semester and get feedback. At the end of the semester, full proposals will be due, along with a 15-minute presentation. Each student must solicit peer review for their pre-proposal and proposal from another student, adjust their work accordingly, and submit these reviews with their assignments. During the final meeting, students will form a proposal review panel, evaluating all presentations with typical proposal review forms. The top-scoring few will receive prizes from me. Not quite the same as getting funded, but good bragging rights and fun (the prize is independent of the grades I assign).

### **Expectations**

To make the semester go smoothly for all, it's worth being clear about my expectations of students. Please:

- Attend every class. I expect all students to attend each meeting in person. If you must participate virtually or miss class, tell me ahead of time. One-third of your grade is for class participation, so this is important.
- Be prepared for class. I expect every student to do and understand readings ahead of class, and I will assume you've done so.
- Participate in class. In this class, students talk more than I do. I will ask lots of questions, expect discussion among students, and set up small group discussions and tasks during class. That means you need to be fully present and ready to contribute.
- Turn in assignments on time. I will deduct 10% from the score for each day any assignment is late.
- Silence your phone and close other laptop windows. We all need your full attention.

### **Credit hours**

This is a 3-credit course. The Department of Education defines a 3-credit course as averaging 3 hours of contact time (typically in class meeting time), and 6 hours of work outside of class per week. The University of Vermont follows this definition. I have designed this course such that your work outside of class (readings, group projects, proposal preparation) will average 6 hours per week over the course of the semester (likely less early in the course and more later).

### **Evaluation and grading**

- Class participation and preparation: 30%
- Literature/case study lead: 10%
- Pre-proposal: 10%
- Proposal: 20%
- Peer reviews: 10%
- Presentation of proposal: 20%

## **COVID-19**

The [Green and Gold Promise](#) clearly articulates the expectations that UVM has for students, faculty, and staff to remain compliant with all COVID-19 recommendations from the federal CDC, the State of Vermont, and the City of Burlington. This includes following all rules regarding testing, facial coverings, and social distancing when attending class. [The Code of Student Conduct](#) outlines policies related to violations of the Green and Gold Promise. Sanctions for violations include fines, educational sanctions, parent notification, probation, and suspension.

If you need to isolate or quarantine due to COVID-19, please contact me immediately to make arrangements. Student Health Services will inform your Dean's office to confirm your status. If you are healthy, I will expect you to continue participating in class synchronously online and submitting assignments on time. If you are sick, first I'm sorry and will prioritize your health. Second, again please contact me immediately to let me know (and your Dean's office will confirm). I will work with you make up your course work and get back on track.

The University of Vermont asks me to include this: UVM reserves the right to make changes in the course offerings, mode of delivery, degree requirements, charges, regulations, and procedures contained herein as educational, financial, and health, safety, and welfare considerations require, or as necessary to be compliant with governmental, accreditation, or public health directives.

### **Important UVM Policies**

#### Academic integrity

Offenses against the [Code of Academic Integrity](#) insult the integrity of the entire academic community. Any suspected violations of the Code are taken seriously and will be forwarded to the Center for Student Conduct for further intervention. To read the Code of Academic Integrity and learn more about the Center for Student Conduct, visit their [website](#).

#### Learning accommodations:

In keeping with University policy, any student with a documented disability interested in utilizing ADA accommodations should contact Student Accessibility Services (SAS), the office of Disability Services on campus for students. SAS works with students and faculty in an interactive process to explore reasonable and appropriate accommodations, which are communicated to faculty in an accommodation letter.

#### Religious holidays:

Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please let me know in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time. <https://www.uvm.edu/registrar/religious-holidays>

#### Health & safety resources

Center for Health and Wellbeing: <https://www.uvm.edu/health>

Counseling & Psychiatry Services: (802) 656-3340

If you are concerned about a UVM community member or are concerned about a specific event, we encourage you to contact the Dean of Students Office at 802-656-3380, or anonymously online at <https://www.uvm.edu/studentaffairs>.

#### Statement on Alcohol and Cannabis in the Academic Environment

I want you to get the most you can out of this course. You play a crucial role in your education and in your readiness to learn and fully engage with the course material. Alcohol and cannabis have no place in an academic environment. They impair your ability to learn and retain information for up to 48 hours. In addition, alcohol and cannabis can:

- Cause issues with attention, memory and concentration
- Negatively impact processing and storage of information
- Affect sleep patterns, which interferes with long-term memory formation

It is my expectation that you will do everything you can to optimize your learning and to fully participate in this course.

