

Request for Sustainable Energy Project Proposals

Service-learning partnerships between UMaine students and community partners

Do you have an **idea** you have been wanting to investigate but haven't had the time, resources, or staff?

Do you have **data** you have been meaning to clean, organize, and or analyze but haven't gotten around to yet?

Is there a **topic** you have been wanting to know more about but haven't known where to start?



If YES, then the students in my ECO 405/505 Sustainable Energy Economics & Policy class may be able to help! I am seeking mentors for service-learning (SL) projects related to **sustainable energy** (renewable energy, energy efficiency & conservation) for Spring 2021. SL projects bring students and mentors (YOU) together to solve real-world problems. If you are interested, please

read on to learn more about the role of a mentor and how to prepare a brief 1-page proposal of your idea.

What is service-learning?

Service-learning is a “teaching method which combines community service with academic instruction as it focuses on critical, reflective thinking and civic responsibility. Service-learning programs involve students in organized community service that addresses local needs, while developing their academic skills, sense of civic responsibility, and commitment to the community” (<http://umaine.edu/volunteer/service-learning/>). The “community” in this case could be a town, neighborhood, or group of citizens near the University or within the State, the University itself, a tribal nation living near the University, the State government, or any group of people or entity in need of help to advance sustainable energy in the State.

SL provides an opportunity for students to deepen their understanding of course content, improve their confidence, and further develop through practical application their critical thinking, organizational, writing, presentation, and other professional skills to better prepare them for the workforce. SL provides mentors (“community” leaders) an opportunity to make progress on an area of inquiry or project they don’t have the time, resources or staff to handle on their own, learn something new that may inform future work, develop a lasting relationship with the University of Maine and its students, and potentially recruit new talent.

What is the timeline of the project?

12/15/20	Potential mentors submit project proposals to me via email (see template at the end of this document)
1/10/21	I compile the final list of project proposals for students
1/18/21	I give the list to students
1/21/21	Potential mentors give optional 5-min online (Zoom) presentations to class (11:00am-12:15 pm) about proposed work
1/26/21	Students select projects, contact mentors
1/26-2/5/21	Students and mentors have first 1-2 hour meeting online (e.g., Zoom): set schedule for biweekly (every other week) check-in meetings and deadlines for draft products
2/6-4/26/21	Students and mentors meet biweekly for ½ to 1 hour each time (or more as needed) to check-in on project progress; Students and mentors respond to each other’s emails between meetings in a timely fashion
3/15/21	Students and mentors submit first project reflection (Google Form survey)
4/26-4/30/21	Students deliver final product to mentor for review
5/1-5/7/21	Students, instructor, and mentors evaluate final product. Students & mentors submit final project reflection (Google Form survey)

Additional meetings between students and mentor may happen throughout the semester depending on need.

What is expected of the MENTOR?

1. Develop and submit a proposal by the specified deadline
2. Work with me as needed (via email/phone/Zoom) to tailor your proposal to be appropriate for my students before the start of semester
3. (OPTIONAL) Provide a 5-min intro to the project during the second class period (1/21/21 11:00-12:15) via Zoom to get students interested/answer questions
4. Schedule an initial 1-2 hour meeting (in-person or via phone/videoconference) by the first week of February with any students that select your proposal for their project, during which you clearly outline your expectations for the project and answer questions
5. Share your contact information with students and respond to their requests for additional information/guidance on the project in a timely manner (within 48 hours)
6. Set up a biweekly (every other week) brief (1/2-1 hr, or longer if needed) project check-in meeting schedule with students and deadlines for draft products.
7. If requiring a presentation as part of the final products (not required), help organize and be present at the virtual presentation
8. Fill out 2 project reflection forms (middle and end of semester – about 15-20 minutes to fill out each form), which I will provide to assess the usefulness and benefit of the process for you and how well you think the students met your expectations (e.g., provide your perspective on grading their work).
9. Communicate with me throughout the semester about any questions/concerns you have
10. Be patient and encouraging with students. Teach/mentor them about your world and learn from them.

What types of projects can the students do?

The nature of each project will vary depending on what the mentor (YOU) is looking for. ECO 405 is an Economics class focused on sustainable energy, so the project should be related to Economics in some way and definitely have a sustainable energy focus (e.g., renewable energy, energy efficiency, energy conservation). However, Economics is a broad social science and is not always about money. It is about valuing scarce resources, and valuation can take many forms. In addition, ECO 405 takes an interdisciplinary approach to energy economics, focusing on the technical, financial, environmental, and social/cultural aspects of energy options and issues.

All students have some level of ability to conduct traditional informational research (e.g., searching multiple sources – journal articles, media articles, government reports, books, websites, etc – for information on a specified topic) and compile summaries of this information and/or associated data. In class, students will be learning to find, calculate, analyze, and compare quantitative data about energy options, including but not limited to: power capacity, capacity factor, annual energy production, levelized cost of energy, simple and discounted payback period, net present value, annual greenhouse gas and other air pollutant emissions reductions, water consumption, etc.

Although it is not a focus of this class, several students are likely to have additional specialized skills (e.g., statistical analysis, quantitative modeling, programming skills, artistic, etc). In addition, the class typically consists of a mix of engineering, economics, environmental science, and political science students at the undergraduate (mostly juniors and seniors) and graduate level.

Therefore, project proposals could involve one or more of (from most likely/easiest from students point of view to less likely/more difficult):

1. All students have some ability:

- a. Literature review
- b. Data search (through literature and/or calling relevant people/organizations) and preparation of tables/graphs to summarize data
- c. One or more energy calculations we are learning in class (see above) for one or more energy options (renewable energy/energy efficiency/conservation)
- d. Organization/cleaning/summarization of data you provide
- e. ~~Hands-on work (e.g., building window inserts, tabling at an energy fair, teaching K-12 students an energy concept, etc) that you explain/teach/help them prepare for (probably not appropriate/safe during COVID pandemic)~~
- f. Basic design of materials needed to communicate ideas/messages (e.g., posters, brochures, videos, etc)

2. Certain students may have some advanced ability:

- a. Statistical analysis of data you provide
- b. Creation of a quantitative model (e.g., benefit cost analysis, net present value analysis, etc)
- c. Design and/or implementation of surveys/interviews – may be subject to Institutional Review Board approval, which could complicate/delay work
- d. Design or testing of a product or concept (may require funding if materials are needed)
- e. More advanced design/implementation of materials needed to communicate ideas/messages (e.g., posters, brochures, videos, websites, etc)

Knowing the Course Goal and Instructional Objectives may help you better understand what students are learning in this class:

COURSE GOAL

The main goal of this course is to expand student understanding and reasoning skills related to energy choices, issues, and policies in the context of the varied social, economic and environmental implications of energy production, distribution and use.

INSTRUCTIONAL OBJECTIVES

1. Distinguish between concepts of power and energy, and convert between power and energy units across a wide range of energy resources, technologies and uses.

2. Define sustainability and sustainable energy.
3. Compare current energy trends and markets in Maine, the U.S., and the world, and identify the factors influencing these trends over time and space.
4. Identify and evaluate potential sustainable energy solutions across a diverse array of sustainability indicators, including but not limited to: production efficiency & cost, geographic and temporal availability, air pollution, water pollution, water & land use, social acceptability, human health impacts, and safety.
5. Calculate annual capacity factor, levelized cost of energy, net present value, and payback period for different energy projects.
6. Assess and compare the implications of current and potential future energy policies (including carbon prices, emissions targets, efficiency requirements, renewable portfolio standards, and feed-in tariffs) on sustainable energy development.
7. Engage in citizen-oriented solutions to energy issues.
8. Evaluate the role of civic engagement and service learning in creating and implementing sustainable energy solutions.

The quality of student projects can vary – some student projects have been so good we published a journal article from it or they were interviewed/written up in the local news. However, not all students are “A students”, and the results can be mixed. If you go into the process with this understanding and trust that I am doing everything I can on my end to incentivize and teach the information and skills needed for a high-quality project, you will have a better experience.

What types of products should I ask the students to produce?

All students should have some tangible final product of their work at the end of the semester, which will be graded by you (I will supply the grading criteria), them, and me. The format of that final product is entirely up to you and what you need. Here are some ideas:

1. Written report of 5-15 pages
2. Oral presentation of 5-15 min
3. Poster presentation (5-15 min)
4. Brochure, video, poster, or other media to advertise/communicate something
5. How-to guide/video
6. User-friendly model (e.g., in Excel – graduate students may even know R or other programming language) that you can use in future work to easily conduct analysis by entering a few data inputs
7. A workshop led by the students for you and your colleagues
8. A new set of lesson plans for a K-12 class or lesson series
9. A new survey questionnaire that has been tested and you can implement in your work
10. A prototype of a product, website, etc (less likely, but possible for engineers)

How do I prepare/submit a proposal?

Fill in the required information in the template and email me (sharon.klein@maine.edu) your 1-page proposal by 12/15/20, with Subject Line **ECO 405-505 SL Project Proposal**. Please include the following in the Project Description: 1) enough detail that I can picture what students will be doing during the semester and for their final product; 2) how the project will help deepen students' understanding of course goals/objectives and help develop their professional skills/knowledge; 3) how the project will benefit you and your organization/entity (i.e., why do you want to do it?). The main criteria I will use to judge whether a proposal is appropriate for the class is whether it will allow students to use and develop knowledge and skills related to what I am teaching in class and whether it will have a meaningful impact for you, the mentor, and the community you serve.

Students will be allowed to choose their project from a packet of proposals I will provide (see attached examples from last year). If accepted by me, your proposal may be selected by one, multiple, or no students. I encourage students to work in groups, but due to the COVID-19 pandemic, I am also allowing students to work individually because virtual group work can be challenging for some. Please specify in the proposal if you prefer to have students work independently or collaboratively as a group and if you have a limit on the number of students you want to mentor (class size is limited to 40 students so if all students select a project (they are also allowed to select a no-project learning path) and work in pairs (the smallest "group" size) there could be 20 groups of students). If you mentor more than one student/group you can work with the students to decide if multiple students/groups should do work in parallel (i.e., so you have multiple products to compare at the end) or whether each student/group should work on a piece of the project.

It may be helpful for potential mentors to know the [Student Expectations](#) I communicate to the class at the start of the semester:

1. Using careful consideration, select team members (if working in a group) and a project that have potential to work well with your **interests, training, skills, and work style**, but also challenge yourself. For example, you may want to push yourself to work with someone from a different discipline (e.g., teams with engineers, economists, and environmental scientists may be able to think through a wider diversity of issues and solutions than teams focused on one discipline) or select a project that provides opportunities for gaining new academic or professional skills (e.g., selecting a more quantitative project if you usually lean toward qualitative or vice versa).
2. Be **respectful, punctual** (meet all deadlines and be on time for all meetings) and do your **best work** with and for your teammates and project mentor. To produce a good final product(s), you should budget on average AT LEAST 1-2 hours per week outside of class throughout the semester to work on the project and more as the semester progresses. Do not leave all of the work to the last-minute! Rather, work steadily throughout the semester so you will produce the highest quality product and demonstrate to your mentor that you know

how to manage your time (an important professional skill). Your project mentor could become a future employer or job/school reference, so make sure to make your best impression.

3. **Communicate clearly, regularly, and concisely** with your teammates and mentor. This may require speaking up and asking clarifying questions of your mentor when you are confused. This is a learning process for both students and mentor, so don't be afraid to speak up if something isn't clear. Your mentor will learn from that experience as well. But also, don't barrage your teammates or mentor with long-winded emails every day. Find answers for yourself first if possible and then work with your team to consolidate common questions into a concise and well-written email or short phone call to your mentor once a week or less frequently.
4. **Communicate with me early on in the process** if there are any issues with your teammates, project, or mentor that you are not able to resolve internally.
5. Produce the **highest quality project deliverables** (products; i.e., final paper, presentation, etc.) the mentor requests as possible with the time and resources you have. I have worked with the mentors prior to the start of the semester to help curate a list of project descriptions that are appropriate in required skills and requested deliverables for this course. Work with your teammates and mentor early in the semester to get a clear understanding of what your mentor expects for the project deliverables and to make a plan of how the team will accomplish these deliverables. Make sure what you turn in to your mentor and me is your highest quality work, internally reviewed and edited by the team, and of a quality you would submit to an employer.
6. If working in a group: **Worth WITH your team**, not in PARALLEL. It is ok to divide up some parts of the project into some discrete tasks for which each member will be responsible, as appropriate. However, the team needs to set up a regular (ideally weekly) meeting or online (email, videoconference, etc) check-in schedule (outside of meetings with your mentor and me) to discuss each member's progress toward the final deliverables, review and critique each other's work, ask questions, etc. The final deliverables from group work should not look like they were pieced together by separate individuals but rather developed collaboratively by a cohesive team.
7. Respond thoughtfully, constructively, and respectfully, to both **Project Reflections** (posted on Google Classroom; deadlines in Course Outline)
8. **Read all project rubrics and grading information** (posted on Google Classroom) carefully to know how you will be graded. Ask any questions you have about grading early in the semester.
9. Attend office hours when you have a question or concern about the project or want to check in that you are on the right track.

ECO 405/505 Service Learning Project Proposal

Project Name:

First and Last Name of Mentor and Title:

Name of Organization/Entity Mentor Represents:

Mentor Email Address:

Mentor Phone Number:

Best method (phone or email) and times to reach you:

Total number of students are you willing to mentor:

Do you prefer students work individually or in groups?

If in groups, what is the ideal group size for this project?

Project Description