ENV 2002: Special Topics in The Environment:

Photovoltaic Imaginaries: Community Based Experiments in Sustainability Transitions

Fall 2022
Instructors: Robert Soden and Matt Ratto
Tues: 4-6pm
Classroom: ES1042

Short description

This course combines seminar style reading and discussion and participatory design and prototyping with a community-based organization to investigate the particular forms of culture, sociality, and governance that emerge around small-scale, community-based solar energy systems. In addition to learning about solar technologies, students will also gain practical experience with community engaged research and learn about core concepts in science and technology studies (STS) and critical design.

Detailed description:

This seminar style course will investigate the particular forms of culture, sociality, and governance that emerge around small-scale, community-based solar energy systems. We will focus on a specific emerging case study, the energy needs and aspirations of a small group of refugees in Lebanon. The course instructors are currently working with Techfugees Lebanon and Canada to explore how solar charging can address SDG#7, equitable access to energy within this context. Collective outcomes from the course include potential designs for community-based solar systems and a case study writeup that can be used to continue and extend this work.

In addition, the course will explore design methods appropriate for community-based research. A starting point will be to explore how shifting from user needs to community aspirations can better support development goals (Toyama, 2017; Kumar, 2014; Kumar et al, 2019) and what forms of design practice can support this shift.

On the first day of the course, students will sign up to lead one of the weekly seminars. They will be responsible for creating a short presentation on the theme and readings for that week, generating questions, and leading the group discussion. Specific attention will be put to collectively/individually exploring how the readings and discussed concepts connect to the planned case.

Three times during the course, these reading seminars will be supplemented with hands-on workshops intended to deepen student knowledge of some of the material dimensions.
associated with solar energy and to connect the concepts and perspectives from the readings. Additionally, as determined by the instructors, periodic guest lecturers will provide professional and academic insights from their respective areas of knowledge and expertise.

Learning outcomes

- **Technical**: understand the basics of storing, generating, and distributing energy
  - Construct a power bank using DIY powerbank kit and recycled li-ion batteries
  - Construct a solar charger, including panel and solar charging circuit
  - Work through models of energy distribution

- **Design**: learn about certain design practices such as cultural probes, critical making, and service design and consider issues of design justice
  - Design, carry out, and analyze results from a cultural probe
  - Participate in two critical making workshops
  - Participate in a service design workshop

- **Conceptual**: understand and reflect on concepts of socio-technical imaginaries, generative justice, and energy STS.
  - Accomplished via readings, in course discussions, and application in making exercises

Course Evaluation

<table>
<thead>
<tr>
<th>Grading Component</th>
<th>Due Date</th>
<th>Weighting</th>
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<tbody>
<tr>
<td>Participation</td>
<td>Weekly</td>
<td>20%</td>
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<tr>
<td>Reading Responses (10 throughout the semester)</td>
<td>5:00pm on Monday before class</td>
<td>20%</td>
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<tr>
<td>Lead Class Discussion</td>
<td>1 class during the semester</td>
<td>20%</td>
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<tr>
<td>Final Project: Proposals</td>
<td>October 18th</td>
<td>5%</td>
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<tr>
<td>In-Class Research Presentation</td>
<td>December 6th</td>
<td>10%</td>
</tr>
<tr>
<td>Final Paper</td>
<td>Final Exam period</td>
<td>25%</td>
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Attendance and Participation (20% overall): You are expected to attend all classes, complete assigned readings prior to class meetings, and participate in class discussions. You should come to class with the assigned readings/notes so that you can locate specific pages/issues as referred to in discussion. Seminar discussions will be guided, but open. A successful and enjoyable seminar depends on the active and respectful participation of all those present.

Reading Responses (20% overall): Written commentaries in the form of critical reflections, roughly 500 words (1 page single spaced) in length, are required each week at 5:00pm the evening before class. You can choose to write on one of the articles/books, or on a point addressed by several of the readings. Commentaries must be concise, and should be analytical and reflective rather than descriptive. They should reflect a critical reading of the material within the context of the class and/or your own research work. In addition, you should read and respond to other students’ contributions before class begins.

Lead Class Discussion (20% overall): Everyone is responsible for leading one class discussion. You must write a response paper that week and post your commentary and discussion questions by 5pm the day before class. Leading discussion includes a short presentation (15-20 min) designed to generate class discussion, guiding the overall discussion, and providing a summation of main points and discussion questions.

Final Project (40% overall): There will be a final research paper due at the end of the class. This final piece of work is intended to help rather than hinder your program of research. Therefore, deviations from the standard term paper are encouraged (research proposal, journal article draft, thesis chapter... etc.), the only requirement is that the subject of the written work overlap significantly with some of the material covered in the seminar. Paper proposals (1-2 pages) with a preliminary bibliography need to be submitted by Week 6. Each student will present their work, in class, during Week 13.

Class Policies

Late Penalty for Assignments: If you are having difficulty completing your work for any reason, please discuss this with the professors before the due date, to arrange an alternative schedule. If you have not agreed an alternative plan prior to the due date, work submitted up to one week late will receive half marks; after this, it will not be accepted. Note: If you are unavoidably absent from the university, please contact the instructors as soon as you return, to discuss the situation.
**Academic Integrity:** Very few of us have truly original ideas – we almost always build on ideas and information provided by others. However, it is a serious offense to represent someone else’s words as your own, or to submit work that you have previously submitted for marks in another class or program. Assignments, reading summaries and exams will be reviewed for evidence of these infractions. Penalties for these offences can be severe and can be recorded on your transcript. Trust your own ability to think and write and make use of the resources available at U of T that can help you do so (e.g. professors, TAs, writing centres). See the U of T writing website, especially the “How Not To Plagiarize” document at [http://advice.writing.utoronto.ca/using-sources/](http://advice.writing.utoronto.ca/using-sources/) and the website of the [Office of Student Academic Integrity](http://advice.writing.utoronto.ca/using-sources/).

**Accommodation:** The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: accessibility.services@utoronto.ca or [http://studentlife.utoronto.ca/as](http://studentlife.utoronto.ca/as).

**Important**
Depending on our conversations and your interests, the reading list is subject to (slight) modifications. We’ll announce this both in class and on Discord.

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**Course Schedule**

**September 13 - Week 1: Introductory Discussion & Workshop**

**In-Class Activities:**
- Introductions
- Course Overview & Syllabus Discussion
- What it means to do community research? What is Design Justice?
- Workshop 1

**Required Readings:**

**Suggested Readings:**
- [Dumit, Joseph. “How I Read.”](http://advice.writing.utoronto.ca/using-sources/)
September 20 - Week 2: Energy Transitions & Socio-Technical Imaginaries 1

**In-Class Activities:**
- Discussion of readings

**Required Readings:**
- Abbing, R.R., 2021, June. 'This is a solar-powered website, which means it sometimes goes offline': a design inquiry into degrowth and ICT. In LIMITS Workshop on Computing within Limits.

Suggested Readings:

**Homework Due:**
- Cultural Probe (Energy Logging)
- Reading Reflections
- Sign up to lead in-class discussion

September 27 - Week 3: Presentations from Concordia & Cultural Probe Methods

**In-Class Activities:**
- Presentation from Concordia
- Discussion of Readings

**Required Readings:**
- Gaver, B., 2020. The presence project. MIT Press. (Selections)

Suggested Readings:
● Recommendation From Concordia

Homework Due:
● Cultural Probe (Energy Logging)
● Reading Reflections

October 4 - Week 4: Politics of Energy & Infrastructure

In-Class Activities:
● Discussion of readings
● Start of probe design

Required Readings:

Suggested Readings:

Homework Due:
● Cultural Probe Write-Up
● Reading Reflections

October 11 - Week 5: Lebanon, Infrastructure, and Power

In-Class Activities:
● Discussion of readings
● Completion of probe design

Required Readings:
Suggested Readings:


Homework Due:

- Reading Reflections

October 18 - Week 6: Workshop 2 - Generating Electricity

In-Class Activities:

- Assemble a solar charging circuit and measure output (critical making activity to be determined)

Required Readings:


Suggested Readings:

- Other sections on solar website

Homework Due:

- Reading Reflections
- Project Proposals

October 25 - Week 7: Energy Infrastructures & Imaginaries 2

In-Class Activities:

- Discussion of Readings

Required Readings:

*Homework Due:*
- Reading Reflections

**November 1 - Week 8: Workshop 3 - Distributing Energy**

*In-Class Activities:*
- Discussion of Readings
- Workshop 3

*Required Readings:*

*Homework Due:*
- Reading Reflections

**November 8 - Reading Week**

**November 15 - Week 10: Presentations from the Toronto Team**

*In-Class Activities:*
- Presentations from Toronto Team
- Discussion of Readings

*Required Readings:*
• Suggested by Toronto Team

**Suggested Readings:**
• Suggested by Toronto Team

**Homework Due:**
• Research Proposal Presentations  
• Reading Reflections  

**November 22 - Week 11: Labour 2**

**In-Class Activities:**
• Discussion of Readings

**Required Readings:**

**Suggested Readings:**

**Homework Due:**
• Reading Reflections

**November 29 - Week 12: Responsibility, Care, Complicity**

**In-Class Activities:**
• Discussion of Readings

**Required Readings:**
- Jackson or Jackson and Ratto, “Hope”.

**Suggested Readings:**

**Homework Due:**
- Reading Reflections

**December 6 - Week 13: Final Presentations**

**In-Class Activities:**
- Final Project Presentations

**Required Readings:**
- None

**Homework Due:**
- In-Class Presentations