Complete this worksheet after you have modified your course, delivered it, and assessed it. Attach a syllabus/course outline, Activity Sheets for new activities, summary of your assessment, and essential copies of teaching materials to help the mentor team evaluate your achievement of workshop goals.

Course Name: GEOG XXXX Climate Change Mitigation

Instructor Name: Emily Nicolosi

List learning goals for your course, lesson, or activity that highlight new sustainability elements.

By the end of this course, you will be able to:

- … understand basic climate science, and be able to explain it to others.
- … summarize the major categories of climate change mitigation tactics, and be able to give a few examples of each.
- … compare and contrast the environmental paradigms underlying different climate change mitigation tactics.
- … form an opinion on the efficacy of different climate change mitigation tactics.

<table>
<thead>
<tr>
<th>Explain the new sustainability element(s) you incorporated into your course and how they related to the learning goals above (at course, lesson, or activity level). Describe how you see these elements relating to sustainability.</th>
</tr>
</thead>
</table>

** See “Nicolosi Course Alignment Grid” also submitted to this assignment page.

Provide a concise listing of sustainability lessons and activities and show their location in the course schedule. For selected new activities attach a completed Activity Sheet.

** See “Lesson Plan Nicolosi” and the Course Schedule in “GEOG 3220 Syllabus Nicolosi” submitted to this assignment page.

1. What is climate change?
2. What are climate change mitigation targets?
3. Energy production
4. Transportation
5. Construction, waste, urban planning
6. Geoengineering
7. Introduction to the climate change movement
8. Green governmentality
9. Ecological modernization (EM) movements
10. Critiques of Ecological Modernization: Green capitalism
11. Critiques of EM: Carbon footprint, individual behavioral change
12. Radical resistance movements: Climate justice
13. Radical resistance movements: Transition Towns
14. The counter-climate change movement
15. Systemic or system-sanctioned change? Class debate

<table>
<thead>
<tr>
<th>What motivated you to design this course?</th>
</tr>
</thead>
</table>
| The Geography Department at the University currently offers two undergrad climate change courses, one focused on climate science and the other on impacts but none on mitigation. I thought it was important to also offer a course on solutions. I also wanted to design a course that allowed for critical reflection on the different types of climate change mitigation strategies, because I felt that the system-sanctioned, individual behavioral change approach was very dominant in this field and yet may not be effective.

I am hoping that I might be able to teach this course before I graduate or otherwise wherever I might get a job, in either case I think it will be very relevant.
GEOG 3230: Climate Change Mitigation  
Spring 2017  
Day, Time; Location

**Instructor:** Emily Nicolosi  
**Email:** EmilyNicolosi@geog.utah.edu  
**Office Hours:** Day, Time, or by appointment  
**Office Location:** Location

**Required Materials**  
Please subscribe to The Daily Climate at www.dailyclimate.org  
All required readings are posted on Canvas under the “Files” tab.

**Course Description**  
Climate change mitigation is one of the greatest challenges of our time. Through this course, you will unravel the complexity of climate change mitigation through critical thinking about proposed solutions. You will explore the following questions: What are climate change mitigation targets? What are the major approaches to climate change migration, and the assumptions and environmental paradigms that underlie them? How can we evaluate the effectiveness of different climate change mitigation strategies?  
Credit Hours: 3  
Pre-requisites: none

**Course Outcomes**  
By the end of this course, you will be able to:  
- … understand basic climate science, and be able to explain it to others.  
- … summarize the major categories of climate change mitigation tactics, and be able to give a few examples of each.  
- … compare and contrast the environmental paradigms underlying different climate change mitigation tactics.  
- … form an opinion on the efficacy of different climate change mitigation tactics.

**Teaching and Learning Methods**  
This course will be taught primarily through discussion of readings, with minimal lecturing. Students will learn through critically engaging with the readings, and expressing their ideas and opinions by participating in class discussion and through written assignments.

**University Policies**  
1. *The Americans with Disabilities Act.* The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in
2. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

**Course Policies**
Students are expected to engage thoughtfully in the course material, to participate accordingly in class, and to complete all assigned readings and written assignments on their due dates. Faculty is expected to prepare thoroughly for class, to answer student questions in a timely manner, and to return assignments within two weeks.

**Attendance & Punctuality:** Students are expected to attend all classes. If you cannot make class, please write to the instructor in advance indicating as such and review what was discussed in the class you missed with a classmate.

**Participation:** Students are expected to participate regularly and thoughtfully in class, using the “step-up, step-back” rule (i.e. if you are hesitant/shy, step-up, if you are speaking much more than your classmates, step-back).

**Canvas:** All readings will be posted on Canvas under “Files.” All written assignments must be submitted through Canvas. Contact information for the instructor and students in the class is also available on Canvas.

**Assignments**
This course has five written assignments, two short (500 words), two medium (3 pages), and one final paper (5 pages). All submissions must be typed, double-spaced, Times New Roman 12 pt font, and submitted on canvas on the corresponding due date. Late assignments will be down-graded 2 points for each day late.

1. **Climate change science and mitigation targets:** 1) How would you explain climate science to a non-expert? (250 words) 2) What are the four different climate change mitigation scenarios described by the IPCC, which do you think we should target, and which do you think we will target? (250 words) Due September 12.
2. **Technology-based solutions:** Choose one of the technology-based solutions discussed in class between Weeks 4-7. Discuss the pros and cons of this mitigation tactic. (500 words) Due October 17.

3. **Ecological modernization and green governmentality:** Focus here on ecological modernization or green governmentality. What are the assumptions and environmental paradigms that underlie this approach to climate change mitigation? Do you think this is an effective mode for mitigating climate change? Why or why not? (3 pages). Due November 21.

4. **Radical perspectives:** What are the assumptions and environmental paradigms that underlie the Radical Resistance approach to climate change mitigation? Do you think this is an effective mode for mitigating climate change? Why or why not? (3 pages). Due December 5.

5. **Final paper:** Make an argument for one of the approaches to climate change mitigation covered in this course. Why is this method more or less effective than others? Be sure to discuss the environmental paradigm underlying this approach. (5 pages). Due December 16.

**Grading Policy (Evaluation Methods & Criteria)**

Students will be graded on quality of class participation and written assignments. Review of how written papers will be evaluated will be discussed on the first day of class, along with discussion of how to write an effective paper (this document can also be accessed on Canvas).

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation</td>
<td>25</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>10</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>15</td>
</tr>
<tr>
<td>Assignment 4</td>
<td>15</td>
</tr>
<tr>
<td>Final Paper</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Course Schedule**

Please note the readings are listed next to the week they should be read by. Please read the headlines Daily Climate on a daily basis, and at least one full article on the Daily Climate per class period.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic/Discussion</th>
<th>Reading and Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: Aug. 22</td>
<td>Course Introduction and Syllabus/Schedule Review</td>
<td>IPCC SPM The Physical Science, Watch video (on canvas)</td>
</tr>
<tr>
<td></td>
<td>How to write a good paper</td>
<td></td>
</tr>
<tr>
<td>Week 2: Aug 29</td>
<td>What is climate change?</td>
<td></td>
</tr>
</tbody>
</table>
Major Themes by Weeks

Weeks 1-3: What is climate change? What are climate change mitigation targets?

Weeks 3-7: What technology-based solutions are proposed to mitigate climate change?

Week 8-11: How can we categorize climate change mitigation solutions? What are the assumptions and environmental paradigms that underlie them? Focus: Ecological modernization and Green governmentality.

Weeks 11-14: How can we categorize climate change mitigation solutions? What are the assumptions and environmental paradigms that underlie them? Focus: Radical perspectives.

Week 15: How can we use the knowledge and critical thinking skills gained in this class to now evaluate the effectiveness of different climate change mitigation strategies?

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.
Complete one Activity Sheet for each activity you developed that incorporates sustainability into your course.

Activity Name: Grassroots innovations for sustainability: Jigsaw Activity

Instructor Name: Adrienne Cachelin, TA: Emily Nicolosi

State the activity learning goal(s).

By the end of the lesson, students will be able:
1. To identify what grassroots innovations for sustainability are categorically.
2. To explain what the aims of grassroots innovations for sustainability are and to be able to provide examples.
3. To evaluate the efficacy of grassroots innovations for sustainability by weighing their strengths and weaknesses, particularly as applied to notions of environmental justice.

Summarize activity.

The class is divided into 8 groups. Each focuses on one type of grassroots innovation for sustainability, each group is given a handout to read and discuss together. Next, the groups all divide up and re-from so that one “expert” from each group is present in each new group. The new groups then go around taking turns discussing their topic of expertise. In the end there is a full group discussion led by the instructor discussing each type of innovation.

At what point in your course is this activity delivered?

This activity may be delivered towards the end of the course when transformative strategies are discussed (somewhere in Week 12-14).

Provide teaching tips to help other instructors implement your activity in their courses.

1. Before this activity is conducted, the instructor needs to print the information sheets on each type of grassroots innovation for sustainability, preferably with each on a different colored sheet of paper.
2. Before this activity is conducted, the instructor should make a note of how many students are in the class and are present, so that they can divide out the groups accordingly. It is possible that students may need to have more than one sheet each if the class is small.
3. The instructor should have some previous knowledge and background in grassroots innovations for sustainability and environmental justice.
Describe your assessment strategy and instruments for student learning and attitudes. 
Attach grading rubric and/or assessment instruments.

This activity will be assessed through three means. First, the instructor goes around to each group during the two small group discussions to assess whether students are staying on topic and/or need further help or clarification. Second, the instructor tests for understanding through the large group by asking questions of the whole class. Third, the instructor assesses participation through attendance and student engagement with the task.

Rubric:

<table>
<thead>
<tr>
<th>Attendance</th>
<th>Present (1)</th>
<th>Not present (0)</th>
<th>Not engaged with small group discussion (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small group discussion participation</td>
<td>Very engaged with small group discussions (3)</td>
<td>Somewhat engaged with small group discussion (2)</td>
<td></td>
</tr>
<tr>
<td>Large group discussion participation</td>
<td>Participates in large group discussion actively (3)</td>
<td>Some participation in large group discussion (2)</td>
<td>No participation in large group discussion (1)</td>
</tr>
</tbody>
</table>

The following questions may be used during the large group discussion, which seeks to tie the activity to the learning outcomes of the course:

1. How are grassroots innovations for sustainability addressing (or not addressing) environmental injustice?
2. How do grassroots innovations for sustainability relate to theories of environmental justice (in particular, justice as recognition, procedure, and distribution)?
3. How do grassroots innovations for sustainability address macro political economic issues through grassroots, bottom-up action? What are their strengths and weaknesses in doing so?
4. How do the personal choices that grassroots innovators make work (or not) towards equity and justice? How could these innovators be more inclusive of a diversity of populations?
5. To what extent does grassroots innovative activity promote justice and equality for all populations? Is participation in grassroots innovative activity limited to people with a certain socio-economic status? How might this be overcome?

How effective was the activity? What are your ideas for improvement in the future?

Not applicable, this lesson has not been implemented yet.
Department/Course: Department of Geography/GEOG 3230 Climate Change Mitigation

Total class time: 1 hour 20 minutes

Title and Description of Lesson: Grassroots solutions: Transition Towns. This lesson focuses on one type of grassroots solution to climate change: Transition Towns. We will discuss the character of grassroots innovations for sustainability using Transition Towns as an example, and will evaluate the strengths and weaknesses of this approach to climate change mitigation.

Teaching Method Small group work/discussion, informal student presentations, whole group discussion

Instructional Materials and Resources:
Need markers/white board or chalk/blackboard
Bring readings (Seyfang & Haxeltine 2012, Hopkins 2009, North 2010)
Bring handouts on each of the 5 core aspects of Transition Towns (3 copies per group)
This lesson plan sheet with accompanying assessment table filled in with student’s names

Course and Lesson Objectives:
By the end of the lesson, students will be able to:
- Identify the characteristics of grassroots innovations for sustainability, by describing them in your own words and citing real-world examples.
- Explain how Transition Towns seek to mitigate climate change, by considering the 5 core aspects of Transition Towns.
- Evaluate the efficacy of Transition Towns by weighing their strengths and weaknesses.

Timeline and Procedures

Warm up/Review: Introduce today’s topic. Go over what will be covered today. (5 minutes)

Whole group discussion: “Let’s make a list of what “grassroots innovations for sustainability” means, using what you gained from the readings.” Student volunteer compiles the list on the board. Students take notes. (10 minutes)

Small group work: The class is divided into 5 groups. Each focuses on one of the 5 core aspects of Transition Towns: food-growing, local currency, community-owned energy, building community relationships, inner transition. Instructor gives handouts on information regarding each group. The group uses the handout to discuss their sub-topic, and come up with key points to share with the rest of the class, that 1) summarize the aspect, 2) describe how it targets climate change mitigation (15 min)

Small group presentations: Each group presents their information to the rest of the class (each group has 3 minutes). (15 minutes)
Whole group discussion: addressing each of these three questions, in turn, as time allows. Instructor should facilitate discussion (help clarify student’s thoughts, help keep the conversation on target, ask follow up questions that stimulate deeper thought). (30 minutes).

1. Do you think that, by incorporating all of these facets we just looked at, Transition Town’s focus is too broad? Or does it gain strength from being so holistic?

2. Does addressing climate change really require us to re-build our communities from the ground-up, like Transition Towns suggest? Or are Transition Towns “too much work” or a “bad idea” that’s easier solved through government regulation and/or technology?

3. What do you Transition Towns (or grassroots innovations for sustainability generally) has the potential to “scale up” large enough to make an actual impact on global emissions? Why or why not?

Wrap up: instructor will take a few minutes to summarize what was discussed in class, to ask students to keep an eye out for examples of grassroots innovations for sustainability going on in Salt Lake City (post anything interesting to Discussion Board on Canvas), and to review what the upcoming readings/assignments are (5 minutes).

Assessment*

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Contribution to class discussion** (0-5)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

* Note: This table will be pre-filled out with student’s names so instructor can easily do the grading right when class ends for best recall.

**The student contributed thoughtfully to class discussion, demonstrating knowledge of readings, and offering quality (over quantity) contributions. (scale 5 = excellent, 4 = above average, 3 = average, 2 = below average, 1 = not at all)
<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>How Learning Will Be Assessed</th>
<th>Teaching / Learning Activity</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of this course, you will understand basic climate science, and be able to explain it to others.</td>
<td>Discussion re. students’ “climate conversations” report back on the experience to the class. Quiz on climate science basics</td>
<td>Lecture on basic climate science Students find/share short online video about climate change “Climate conversations” assignment Readings</td>
<td>Canvas: Discussion board: students post climate videos, link to lecture slides Canvas: Readings: IPCC SPM The Physical Science, The National Climate Assessment, DailyClimate Teaching Tools: PowerPoint, laptop, projector</td>
</tr>
<tr>
<td>By the end of this course, you will be able to summarize the major categories of climate change mitigation tactics, and be able to give a few examples of each.</td>
<td>Homework assignments: short topical summaries ~500 words (x3)</td>
<td>Lectures on climate change mitigation tactics (by category) Readings</td>
<td>Readings: Moran Ch 14, Pittock Ch 8, Lomborg Ch 2, Girod et.al., DailyClimate Teaching Tools: PowerPoint, laptop, projector</td>
</tr>
<tr>
<td>By the end of this course, you will be able to compare and contrast the environmental paradigms underlying different climate change mitigation tactics.</td>
<td>Participation in class discussion of readings Homework assignment: analysis of climate change mitigation tactics re. Brulle reading ~500 words</td>
<td>Student presentations Lectures Class discussions Readings</td>
<td>Canvas: Readings: Brulle, Dawson, Muller, O’Brien, Brulle, North, DailyClimate Teaching Tools: PowerPoint, laptop, projector</td>
</tr>
<tr>
<td>By the end of this course, you will be able to evaluate the effectiveness of different climate change mitigation tactics.</td>
<td>Critical analysis paper (5 pages) Participation in class discussion of readings, and class debate</td>
<td>Lectures Class debate Readings</td>
<td>Canvas: Readings: Brulle, Dawson, Muller, O’Brien, Brulle, North, DailyClimate Video: Climate of Doubt Teaching Tools: PowerPoint, laptop, projector</td>
</tr>
</tbody>
</table>
Readings List (in order of appearance)


Climate of doubt [Motion picture]. (2012). PBS.