EAS 567 Social Vulnerability and Adaptation to Environmental Change (3 credits)

Fall 2018 Syllabus

Time and Location: Fridays, 9:00-10:20 AM in Dana 3556, and 10:30-11:50 AM in Dana 3038

Instructor: Paige Fischer, Assistant Professor, SEAS, 3008 Dana, apfisch@umich.edu

Office hours: By request

Course overview: Increasingly frequent and severe wildfire, flooding and storm events are raising concerns about how society can adapt to environmental change. Key to identifying opportunities for adaptation is the concept of social vulnerability. Social vulnerability refers to the geographic and socio-economic influences on the chance of harm to humans and the capacity of people to prepare and respond. This three-credit course will introduce students to the concepts of social vulnerability and adaptation as well as frameworks for assessing vulnerability and planning adaptation in human communities. The course will not address these concepts from an environmental policy or politics perspective. Rather, the course will explore theories and methods for investigating social vulnerability and adaptation from a behavioral perspective.

Students will learn methods and skills for evaluating exposure, sensitivity and adaptive capacity at different levels of social organization (individuals, communities, institutions), and designing vulnerability assessments and adaptation plans. The focus will be on climate change and related natural hazards relevant to coastal and inland areas, including wildfire, drought, flooding, sea level rise and storm events. Small group discussions, projects and conversations with practitioners will engage students in co-learning.

Expectations: This is a graduate-level course geared toward students in the natural and social sciences who are interested in natural resource and hazards management, environmental conservation and human-environment interactions. The course will entail considerable reading, writing and participation in class discussions. Class meetings will involve discussions of the topic areas led by the instructor, student-led discussions of the readings, lectures by guest speakers, and one or more field trips. Students will submit weekly writing assignments, and lead and participate actively in class discussions. For the final project students will design a social vulnerability assessment or adaptation plan.

Learning outcomes: Upon completion of this course, students will be able to:

- Define and describe social vulnerability and adaptation and their different dimensions
- Compare and contrast perspectives on vulnerability and adaptation
- Articulate needs, challenges, and opportunities for reducing vulnerability and increasing adaptation
- Identify relevant data and how to collect and analyze them
- Design vulnerability assessments and adaptation plans
- Present arguments and recommendations regarding vulnerability and adaptation in a coherent, articulate and professional manner
Assessment: Progress toward learning outcomes will be assessed through evaluation of:

- Weekly critiques of the reading 50%
- Facilitation of class discussions of the reading 10%
- Participation in class discussions 15%
- Final presentation 10%
- Final paper 15%

**Weekly reflections on assigned reading:** Twenty-four hours before the class meeting each week students will submit a clearly and tightly written 300-word essay reflecting on the assigned reading. Students should identify key problems or issues addressed by the readings, critique assumptions about social vulnerability made by the authors and identify potential contributions made to understanding of social vulnerability. Students do not have to discuss each paper in equal depth, but must demonstrate that they read each paper carefully. Students are encouraged to review each other’s reflections in preparation for a class discussion. One point will be deducted for each day of each late submission.

**Facilitation of class discussions of assigned reading:** Students will work in pairs to lead class discussions of the readings for at least one class meeting. Students must come prepared to summarize the readings, pose questions to engage class members in discussion, and make critical arguments about the readings.

**Class participation:** Students must demonstrate that they have thoroughly read and reflected on the assigned readings by actively participating and engaging fellow students in class discussion of the readings and with any guest speakers. Students must attend all classes unless arrangements are made ahead of time. One point will be deducted for each unexcused absence.

**Final paper:** Students will design a vulnerability assessment or adaptation plan for a specific community in relation to a specific set of environmental changes or natural hazards. Students will submit the design in a 10-page double-spaced paper (not including tables, figures or references). The final papers must integrate the literature about social vulnerability and adaptation as well as secondary data about the chosen environmental change or natural hazard and the community. The paper is due the last day of class. See template.

**Final presentation:** Students will present drafts of their final papers in oral format

**Grading scheme:** Minimum for A+=97, A=93, A-=90, B+=87, B=80, B-=80, C+=77, C=73, C-=70, D+=67, D=63, D-=60, F=40
<table>
<thead>
<tr>
<th>Week</th>
<th>Objectives</th>
<th>Assignments (due 24 hours before class)</th>
<th>In-class activities</th>
<th>Lectures</th>
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| 1    | 1) Understand course goals and expectations  
     2) Become familiar with key concepts | Reflections on readings:  
    Come prepared to describe the social vulnerability of a community with which you are familiar | Course overview  
Introductions | 1) Social vulnerability |
| 2    | 3) Become familiar with concept of social vulnerability and the evolution of the concept | Reflection on readings:  
| 3    | 4) Understand the concept of exposure to environmental changes and natural hazards  
     5) Become aware of methods for assessing, mapping and modeling human exposure | Reflection on readings:  
| 4    | 6) Understand the concept of sensitivity  
     7) Become familiar with methods for assessing sensitivity to environmental changes and natural hazards | Reflection on readings:  

Version September 14, 2018
| 5 (10/5) | 8) Understand the concept of adaptive capacity  
9) Become familiar with methods for assessing adaptive capacity to environmental changes and natural hazards |
| 6 (10/12) | 10) Understand the concept of adaptation and how it differs from coping and maladaptation  
11) Become familiar with frameworks for assessing adaptation |
<p>| 7 (10/19) | 12) Learn how a community of tart cherry producers is vulnerable to climate change and how they are responding |
| 8 (10/26) | 1) |</p>
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<tr>
<th>Week</th>
<th>Lecture Title</th>
<th>Reading 1</th>
<th>Reading 2</th>
<th>Reading 3</th>
<th>Debrief on Field Trip</th>
<th>Discussion of Final Project Proposals</th>
<th>Special Guest</th>
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<tr>
<td>12 (11/23)</td>
<td>Thanksgiving/no class</td>
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| 13 (11/30) | 10) Understand principles of vulnerability assessment and adaptation planning  
           11) Distinguish between climate change and natural hazard approaches |
|          | **Reflection on readings:**  
| 14 (12/7) | **Submit final paper**                                                   |
| 15 (12/14) | **Finals week/no class**                                                 |

Version September 14, 2018
Required and optional readings that convey important social vulnerability concepts and methods, and that provide empirical examples of vulnerability assessment and adaptation research using different approaches and methods. These are not meant to be all the seminal papers in the field; rather a survey of conceptual frameworks and methodological approaches with an emphasis on North America, and developed countries to provide examples of vulnerability an geographic areas with many resources:

General social vulnerability:


Exposure:


Sensitivity:


**Adaptive capacity:**


**Rural, natural resource-based communities:**


Risk perception:


Social construction of risk:


Social networks


Institutions


**Ethical considerations**


**Planning and assessment approaches**


**All:**


