ENSP 399: Global Climate Change - Coastal Indicators

Meets: Fridays 10am-1pm, Spring 2015 Semester, Location: 0215 SYM

Instructors
Dr. Ariana Sutton-Grier
Email: ariana.sutton-grier@noaa.gov
Phone: 301-713-3074
http://www.suttongrier.org

Dr. Melissa Kenney
Email: kenney@umd.edu
Phone: 202-419-3477
http://www.tinyurl.com/melissakenney

Teaching Assistant: Maria Sharova
Email: mariaindicators@gmail.com

Course Description:
The goal of this course is for students to become familiar with challenges faced by coastal communities and ecosystems in the face of climate change and to learn about methods for measuring and monitoring coastal change, risks, and coastal resilience (the ability of ecosystems and human communities to survive and recover quickly from disturbances such as
hurricanes or coastal flooding). This will include an exploration of indicators which are used to measure concepts such as resilience or climate impacts that are multi-faceted and sometimes difficult to define and quantify. A main goal of this class is to help students develop skills important for most careers, including science policy. As such, this class is targeted towards upperclassmen. Prerequisites: None.

Learning Goals for the Class:
This course will focus on hands on experience to develop skills that are important for many professions including, but not limited to, science policy work. These skills include public speaking, memo writing, asking interesting, intelligent questions, rapid synthesis and distillation of key information, and developing talking points and quick “elevator” speeches for conveying information succinctly and clearly.

Most work opportunities do not involve working alone, but typically involve group efforts, therefore practice working in groups is excellent training for any career. This course will use group work fairly extensively throughout the semester and will require students to coordinate on assignments outside of class and to develop a group project together including a report and final presentation of that product.

In addition, this class will focus on coastal resilience and indicators. Indicators are measures of status, rates, and trend of physical, natural, systems and can be used for a range of purposes including supporting decision-making, communicating key concepts, and scientific inquiry. Often they are used as intermediaries between the science and policy communities, by translating scientific information in a way that is relevant to policy decisions.

By the end of the class students will be able to:

1. Write science policy memos intended to be briefing or decisional memos;
2. Write and present short (30-60 sec to 4-5 minute) speeches conveying key information to decision-makers;
3. Formulate insightful questions when listening to someone else’s talk;
4. Dissect and explain the different parts of an indicator, including aggregate indicators and proxies;
5. Evaluate the visual presentation of indicators, including the strengths and weaknesses of the information presented in dashboards, score cards, and other visual representations of indicators;
6. Develop an indicator to address a specific coastal threat (such as hypoxia, sea level rise, ocean acidification, harmful algal blooms, habitat loss) or to help a particular community (such as native communities, elderly, extremely poor, or the very young);

Late Work Policy:
Any assignment that is turned in late will lose 10% per day it is late. Assignments are due at the beginning of class on day they are due unless otherwise specified. Thus an assignment that is turned in after class will be considered 1 day late. The student or the student groups are
expected to turn in assignments on time even if a student is unable to attend class for any reason. Rare exceptions will be considered on a case-by-case basis, consistent with university policies.

Resubmission policy:
For written assignments worth at least 10% of the grade, a student may request permission (once the grade is received) to address the comments, improve the assignment, and resubmit it for a potential maximum increase of 1 full grade in score (for example, if a student got a B-, then one would be able to potentially get as high as an A- on the resubmitted work). This option will not be available for the final report. We have a resubmission policy for this class because we recognize that many of the skills we are having students work on (such as memo writing) are brand new. Therefore, we want students to have the opportunity to revise assignments and improve the science policy skills we teach in this course. Revisions must be submitted by the next class period. Regrades may not be completed immediately; we will get to them as quickly as possible. Please make sure to mark at the top of any assignment needing regrading that it is "For Regrading."

Assignments:
There will be two memos assigned, two short “elevator” speeches, and two group assignments, and a group final project. The first group assignment will be to dissect one of the aggregate indicators (such as the Global Adaptation Index or the Social Vulnerability Index) and to explain it and to critique it in both a short memo and a group presentation. The second group assignment will be to look at different ways to visualize information (such as the Puget Sound Dashboard or the Chesapeake Bay Scorecard) and to explain it and suggest the most appropriate visualization approach to reach a specified target audience.

The final group project will be a comprehensive synthesis and research project to develop a coastal resilience indicator and visualization tool on a coastal threat such as nuisance flooding, storm surge flooding, ocean acidification, eutrophication and dead zones, drought, or harmful algal blooms. Students will research the topic as well as options for how communities can build resilience to the threat, and then students will develop an indicator (or suite of indicators) to help communities measure their resilience level and to determine how best they can become more resilient. The final project will include a final report as well as a class presentation on their indicator.

In addition to these specific assignments, there will be reading assignments and a reading journal will be required to accompany readings. For some weeks, questions or prompts for the reading will be assigned in addition to other reactions. Reading journal responses are due before class on Friday unless an earlier due date is specified, which may occur particularly when there are guest speakers.

Extra Credit:
There is an option for extra credit. Students can attend an event, either on campus or in DC, that relates to science policy or climate change, or coastal resilience. If it was not an event sent
out by the instructors, then an event must be pre-approved by the instructors to assure it will quality for extra credit. Students will attend, write a brief summary of the event, and give a 2 minute elevator speech to the class on the main take home messages from the event. This will be worth up to 1% of the total grade, and students can do this up to twice during the semester.

Class Participation:
Participation is absolutely key in this class which means attendance is absolutely critical. Activities will be hands on and virtually impossible to make up if students miss a class. And participation is crucial, it will be a substantial part of each student’s final grade (15%).

Academic Integrity Policy (as stated by the UMD Honor Council):
The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit www.shc.umd.edu. To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment).”

Grading:
Participation: 15%
Reading Journal 5%
Memos: 10% each, total of 20%
Elevator speeches: 10% total, 5% each
Assignments: 25% (Aggregate Indicator project, Visualization assignment)
Final Project: 25% (5% Draft, 5% presentation, 15% report)

Course Schedule
(Note: Some guest speakers are still being confirmed and some readings are not yet posted, so some changes to this schedule will occur as the semester progresses.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Class Topic</th>
<th>Assignment/Activity</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/30</td>
<td>Syllabus and Course Intro. Threats Part I, Elevator Pitches</td>
<td>Guest Speaker Dr. Cynthia Wei, SESYNC</td>
<td>Sandifer and Sutton-Grier, 2014 Case Study Palmer, 2012</td>
</tr>
<tr>
<td>2/6</td>
<td>Intro to Socio-environmental synthesis, Case Study on Coastal Resilience</td>
<td>Guest Speaker Dr. Cynthia Wei, SESYNC</td>
<td>Sandifer and Sutton-Grier, 2014 Case Study Palmer, 2012</td>
</tr>
<tr>
<td>2/13</td>
<td>Elevator pitches on coastal threats <strong>No meeting in class</strong></td>
<td><strong>First memo due</strong></td>
<td>Barbier, 2014 Aerts, 2014 Cheung et al., 2012</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Assignment</td>
<td>References</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 2/20* | Introduction to Indicators Part I (aggregate, proxies, etc.) Discussion about how to develop questions for speakers | Revised draft of memo due (optional)                                        | Cheung et al. 2013  
Also one paper of your choosing  
Rabalais et al., 2009 |
| 2/27  | Introduction to Indicators Part II                                   | Guest Speakers Maria Dillard and Theresa Geodeke, NOAA                     | New York Times article  
Environmental Performance Index  
Nature Climate Policy Article  
National Climate Indicator System Report  
NCIS Fact Sheet  
NCIS Policy Memo  
Wheeler et al. 2012  
MEA Health Synthesis 2005 (up to PDF page 37) |
| 3/6   | Group presentations, final group project introduction                | Aggregate Indicators Assignment due  
Guest Speaker Michael Savonis ICF International |                                                                           |
<p>| 3/13  | Visualizations of indicator information (dashboards, score cards, etc.) |                                                                            | Disaster Resilience: A National Imperative, 2012 Chapter 1 and 4 |
| 3/20  | <strong>Spring Break</strong>                                                       |                                                                            |                                                                           |
| 3/27* | TBA                                                                   | Draft of Indicator Project Topic Due                                       | GMU Communication Papers |
| 4/3   | Final Group Project Work Day                                         | In class pitch for idea                                                    |                                                                           |
| 4/10  | Visualizations of Indicator Information, presentation review          | Presentation of class activity on visualization due                        | Browse World Bank Indicators, NASA Indicators, EPA Indicators, NOAA Climate Dashboard, Gain websites Spalding et al., 2014 |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reference/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/17</td>
<td>Social (non-structural) Resilience</td>
<td>Draft of Indicator Project Due</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social Vulnerability Index</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cutter, 1996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cutter et al., 2003 (High level read)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disaster Resilience: A National Imperative, 2012 (Summary and Ch 1 &amp; 4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Visualization Guidance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Societal Indicators Workshop Report (Skim)</td>
</tr>
<tr>
<td>4/24*</td>
<td>Resilience and Natural Infrastructure, Jigsaw</td>
<td>Arkema et al., 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Zhang et al., 2012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bayas et al., 2011 (Mike)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Gedan et al., 2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shepard et al., 2011 (Selena)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moller et al., 2014 (Selena)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Rodriguez et al., 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ferrario et al., 2014 (Laura)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Firth et al., 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hanley et al., 2014 (Colin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. TNC Howard Beach report</td>
</tr>
<tr>
<td></td>
<td></td>
<td>van Slobbe et al. 2013 (Jessica)</td>
</tr>
<tr>
<td>5/1</td>
<td>Field Trip to USGCRP or NOAA</td>
<td>Decisional Recommendation Memo Due</td>
</tr>
<tr>
<td>5/8</td>
<td>Final Presentations</td>
<td>Final Reports Due</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revised Memo 2 (optional) due</td>
</tr>
</tbody>
</table>
*Indicates instructors will be able for a brown bag lunch with students after class to discuss anything related to science policy careers or professional development such as research, graduate school, career options, etc.

**Required Readings**


Environmental Performance Index. What Are Indicators in Practice? <http://epi.yale.edu/what-are-indicators-practice.>


