GEOG 240 - Syllabus
Climate Change, Water, and Society

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Office Hours: Thursdays 12-2, or by appt

Catalog course description. CLIMATE CHANGE, WATER, AND SOCIETY (3). Introduction to social, ecological and economic impacts of climate change induced water problems in various geographic regions and cultures. Approaches to climate change mitigation and adaptation in various parts of the world. (Bacc Core Course)

COURSE DESCRIPTION AND OBJECTIVES
Climate change will have many ecological, social and economic impacts. In many places those impacts are already being experienced. Important impacts involve water – water quantity, water quality, and the human and nonhuman systems that depend on associated ecosystem services. The nature and degree of vulnerability of these systems to climate change will vary in different geographic contexts, however, and will be determined in large part by human actions to mitigate their consequences. Understanding of the links between climate change, water and society demands integration and synthesis of information regarding hydrologic, atmospheric and socioeconomic systems, and the ability to evaluate different approaches to mitigation and adaptation. Such an understanding will inform decisionmaking under uncertainty. In this course we will adopt a global perspective to understand the diversity of impacts and responses to climate change and water resource management. We will draw on concepts and theories associated with resilience, adaptation, transformation, vulnerability, sensitivity, exposure, hazards, disaster, risk, social learning and governance. We will:

(1) Compare social, ecological and economic impacts of climate change induced water problems in different regions and among different social groups

(2) Consider three categories of vulnerability to climate change as it relates to water resources
   - Meteorological and climatological vulnerabilities: magnitude, frequency and timing of storms and droughts
   - Hydrological system and design vulnerabilities: physical design, operating rules, and institutional settings for water resource management
   - Geographical and societal vulnerabilities: relative levels of demand with respect to supply, water quality, agricultural needs, hydroelectricity, and protection of fragile ecosystems from rapidly changing socio-economic environments

(3) Characterize different approaches to climate change mitigation and adaptation emerging around the world
Evaluate the effectiveness of different mitigation/adaptation strategies in terms of
a. protecting critical ecosystem services and human well-being
b. ensuring equity, justice, and other ethical considerations
c. enhancing resilience of social-ecological systems to prepare for coming change

BACCALAUREATE CORE COURSE
Successful completion of this course fulfills learning outcomes for OSU’s Baccalaureate Core course requirements for Social processes and institutions in the Perspectives category. Through Social Processes and Institutions students gain knowledge of how human beings are inevitably social. The social sciences study social institutions and processes as well as human behaviors and values in contemporary society. Students taking this course will:

1. Use theoretical frameworks to interpret the role of the individual within social process and institutions
2. Analyze current social issues and place them in historical context(s)
3. Critique the nature, value, and limitations of the basic methods of the social sciences

For example, as indicated in the learning outcomes listed below, students will draw on theories from the hazards tradition in geography to gain insights into the diverse ways citizens and policymakers act in response to real and perceived risk associated with drought, water scarcity, and other climate related natural phenomena. Theory will also allow students to identify and understand historical patterns and trajectories in human and environmental systems (e.g. unsustainable water development, land degradation) and analyze their connections with modern day problems. Through exposure to scholarly literature, students will gain perspective on the strengths and weaknesses of different methods used by social scientists to research real world problems.

STUDENT LEARNING OUTCOMES
(1) Students will be able to demonstrate an understanding of

• Linkages between climate and water (physical geography)
• Climate change projections in different regions
• Projected impacts of climate change on water resources in different regions, including threats to ecosystem services and human well-being (e.g. health, quality of life, MEA components)
• Key terms and concepts associated with vulnerability, resilience and adaptation
• Social science methods for assessing vulnerability and resilience
• Ethical issues associated with climate change
• Why some groups of people are more vulnerable than others, and an understanding of their experiences, challenges, hardships, and coping strategies
• Relationship between personal behavior and impacts in other parts of the world
• Alternative policy and management solutions, adaptation strategies
• Opportunities for personal action to contribute to problem-solving
(2) Students will be able to apply understanding of key concepts related to vulnerability, resilience and adaptation to real world situations

- Characterize the vulnerability of a particular place or group of people by synthesizing information about exposure, sensitivity and adaptive capacity
- Analyze the causes of vulnerability in different case studies (how and why communities around the world will be impacted differently)
- Compare, contrast, and critique different approaches to climate change adaptation based on established criteria including
  - Analyze tradeoffs associated with different adaptation strategies in terms of
    - triple bottom line sustainability – social, ecological, economic
    - equity, justice, moral obligations, and other ethical considerations

(3) Demonstrate a global perspective on the issues discussed in class

- Cultural self-awareness – why aren’t we as vulnerable as others?
- Respect (valuing other cultures)
- Openness (withholding judgment)

EXPECTATIONS
Students are expected to attend all classes and engage substantively in class discussions and activities, including completing all reading assignments before class. Students will demonstrate a solid mastery of the English language (spelling and grammar) and produce high quality, written material that has been proofread. All email or other electronic communication with Dr. Gosnell should be limited to questions that require short answers. Anything requiring longer communication should occur during office hours. You are encouraged to come to office hours! Unless special permission is granted by the professor, use of computers or mobile electronic devices is not permitted during class.

TEXTBOOKS AND OTHER READINGS
- Other readings on Blackboard and through Valley Library (e-Books)

ASSIGNMENTS
- Current Event Write-Up: Climate Change Impact Characterization
  - Search newspapers and websites for a current event that illustrates the impacts of climate change on water resources.
  - I recommend starting here: http://climatedesk.org/
  - Write a one-page (single-spaced) summary and response, referencing class concepts, theories, readings, and themes
- Group Project: River Basin Assessment
  - In groups of 4-6, students will carry out integrated assessments of vulnerability of hydrologic and water resource systems and socio-economic systems to climate
variability and change, and strategies for adaptation in selected river basins around the world
- Assessments will include characterization of (1) exposure; (2) sensitivity; and (3) adaptive capacity in their case study basins, with attention to variations across race, class, ethnicity
- Assessments will also characterize and evaluate local, regional and national adaptation strategies
- Groups will prepare a report and present their findings to the class

**GRADING**
Current Event Write-Up (Due April 27) 15%
Group Project 20%
3 Quizzes (April 10, April 20, May 6) 30%
Final Exam 30%
Participation and Attendance 5%

**STUDENTS WITH DISABILITIES**
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

**COURSE SCHEDULE**
DP = Dire Predictions; HOD = Heart of Dryness

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<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>Mar 30</td>
<td>Intro to Course</td>
<td>NA</td>
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<td>Apr 1</td>
<td>Baseline Survey – Beliefs and Concerns</td>
<td>NA</td>
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<td>Apr 3</td>
<td>Climate Change, Water, and You</td>
<td>Read HCN articles on BB</td>
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<td>Apr 6</td>
<td>Key Concepts: Impacts, Adaptation, Vulnerability, Mitigation</td>
<td>Smit and Wandel 2006</td>
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<td>Apr 8</td>
<td>Intro to Hydroclimatology - Guest Speaker Dr. Anne Nolin</td>
<td>DP Parts 1 and 2</td>
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<td>Apr 10</td>
<td>Climate Change Impacts - Overview</td>
<td>DP Parts 3 and 4</td>
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<td>Apr 13</td>
<td>Climate Change and Water Governance</td>
<td>Hill 2012 Chapter 1</td>
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<td>Apr 15</td>
<td>Assessing Vulnerability to Climate Change</td>
<td>Fussel and Klein 2006</td>
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<td>Apr 17</td>
<td>Gunnison Basin Climate Change Vulnerability Assessment</td>
<td>TNC 2011, Knapp 2011</td>
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<td>Apr 20</td>
<td>Willamette Water 2100 – Guest Speaker Dr. Mary Santelmann</td>
<td>Farley et al. 2011</td>
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<td>Apr 22</td>
<td>FILM – Dr. Gosnell at AAG</td>
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<td>Apr 24</td>
<td>FILM – Dr. Gosnell at AAG</td>
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<td>Apr 27</td>
<td>Vulnerability and Pro-Poor Climate Policy</td>
<td>Ribot 2010, CURRENT EVENT</td>
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<td>Apr 29</td>
<td>Gender, Climate Change, and Vulnerability</td>
<td>Demetriades &amp; Esplen 2010</td>
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<td>May 1</td>
<td>What is Successful Adaptation to Climate Change?</td>
<td>Moser and Boykoff 2013</td>
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<td>May 4</td>
<td>Assessing Barriers to Climate Change Adaptation</td>
<td>Moser and Ekstrom 2010</td>
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<td>May 6</td>
<td>Guest Speaker Dr. Biniam Iyob, Bureau of Food Security USAID</td>
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<td>May 8</td>
<td>Adaptation, cont.</td>
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<td>May 11</td>
<td>Heart of Dryness</td>
<td>HOD Intro, Part I and II</td>
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<td>May 13</td>
<td>Heart of Dryness</td>
<td>HOD Part III and IV</td>
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<td>May 15</td>
<td>Heart of Dryness</td>
<td>HOD Part V and VI</td>
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<td>May 18</td>
<td>Mitigation: How Can We Turn This Around?</td>
<td>HOD Part VII and VIII</td>
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<td>May 20</td>
<td>Ethics of Climate Change: What is Your Role?</td>
<td>DP Part 4 and 5</td>
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<td>May 22</td>
<td>Basin Assessment Presentations</td>
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<td>May 25</td>
<td>MEMORIAL DAY – NO CLASS</td>
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<td>May 27</td>
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<td>May 29</td>
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<td>Jun 1</td>
<td>Basin Assessment Presentations</td>
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<td>Jun 3</td>
<td>Basin Assessment Presentations</td>
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<td>Jun 5</td>
<td>Course Wrap-Up and Review</td>
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<td>Jun 8</td>
<td>FINAL EXAM – 12pm</td>
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SUPPLEMENTAL COURSE READINGS


Moore, K.D. and M.P. Nelson.


**ACADEMIC HONESTY POLICY, EXPECTATIONS, AND CLASS ETIQUETTE**

Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

**Cheating:** Use or attempted use of unauthorized materials, information or study aids
**Fabrication:** Falsification or invention of any information
**Assisting:** Helping another student to commit an act of academic dishonesty
**Tampering:** Altering or interfering with evaluation instruments and documents
**Plagiarism:** Representing the words or ideas of another person as one’s own

The goal of Oregon State University is to provide students with the knowledge, skill, and wisdom they need to contribute to society. University rules seek to assure each student’s freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. **Please turn off all electronic devices.** For more information please see [http://oregonstate.edu/admin/stucon/achon.htm](http://oregonstate.edu/admin/stucon/achon.htm).

*In addition to the above, I expect each of you to come to class each day having done the readings, ready to participate in group dialogue.*

*Late assignments will be marked down one full grade for each day they’re late unless prior arrangements have been made.*