ESM 237 - Climate Change Impacts and Adaptation  
Spring 2021

Instructor: Samantha Stevenson, sstevenson@ucsb.edu  
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Course Lecture Times: Monday 9:30-10:45am, via Zoom  
(note: tune in at the start, actual meeting times may be shorter!!)

Office Hours: Wednesday 9:30-10:45am via Zoom: drop in any time during this window  
-or- by appointment, email to arrange

Instructions for Zoom Connections:  
https://ucsb.zoom.us/j/6475525353  
Meeting ID: 647 552 5353

Course Objectives
• To provide an understanding of the expected impacts of climate change as a function of spatial  
and temporal scale
• To be able to construct conceptual models of a system affected by climate change, including  
all major components and linkages
• To become familiar with the techniques used in generating future projections on both global  
and regional scales, and to understand the limitations of these datasets
• To understand the process of generating climate adaptation plans, and the costs and benefits  
associated with these plans in different stakeholder groups

My goal for this course is to provide you with the tools necessary to create your own assessments  
of climate change impacts for a system of your choice, and to understand the tradeoffs involved  
in the creation and implementation of climate adaptation plans.

Course Content Areas
• Conceptual Model Principles  
• Climate change projections and future scenarios  
• Impact assessments  
• Techniques for downscaling climate datasets  
• Climate adaptation plans

Skill Areas
• Applying systems science approaches to conceptualize the processes by which climate change  
will affect a given sector/region/environmental problem
- The ability to choose the appropriate type of model (conceptual, empirical, numerical) to represent a system of interest, and to use it to generate useful quantitative information on climate change impacts
- An understanding of the properties and limitations of global climate models and future climate scenarios, as well as the ability to use their output to estimate climate change impacts
- The capacity to effectively critique existing adaptation plans based on scientific principles, as well as creating the broad outlines of new adaptation plans.

**Course Assessment**
Your performance in this course will depend on four homework assignments, a one-page adaptation brief, and a final project/presentation illustrating an adaptation plan developed by your group.

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<tr>
<th>Component</th>
<th>% Total</th>
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<tbody>
<tr>
<td>Homework assignments (4 in total)</td>
<td>40</td>
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<tr>
<td>Post-lecture assessments</td>
<td>10</td>
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<tr>
<td>Adaptation Brief</td>
<td>15</td>
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<tr>
<td>Adaptation Project Presentation</td>
<td>10</td>
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<tr>
<td>Adaptation Project Report</td>
<td>25</td>
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**Course Schedule** (subject to change)

See Gauchospace for specific lecture topics each week, reading materials/slides, assignments, and due dates.

- **Weeks 1-2:** Climate Change and Global/Regional Trends
- **Weeks 2-4:** Models, Climate Models, and Downscaling
- **Weeks 5-6:** Impact Assessment
- **Week 7:** Adaptation Plans
- **Weeks 8-10:** Case Studies in Climate Adaptation Across Sectors