



## GEOS 195K

### Contemporary Earth System Science

*A lecture and discussion colloquium course for early-career undergraduate students interested in Earth and Environmental Science*

**Fall 2009**

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#### Details

- Meets Wednesdays, 1:00-2:15 pm, Location: [ILC 119](#)
  - [GEOS 195K](#)
  - Sections 001 and Section 002H
  - Units: 1
  - Taught annually during Fall semester
  - No prerequisites
  - Coordinator: [Peter Reiners](#); E-mail: reiners at u.arizona.edu; Phone: 626-2236; Office Hours: Mondays 1:00-2:30 pm, and by appointment, [Gould-Simpson 521](#).
  - Lecturers and Discussants: 14 throughout semester; see below.
  - Maximum Number of Students: 40 (section 001); 10 (section 002H).
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#### Description

CESS will introduce early undergraduate students to a variety of modern problems and areas of active research in Earth, environmental, and planetary science, emphasizing interdisciplinary applications of physics, chemistry, and biology in an Earth Systems approach, and focusing to some degree on issues with societal impact.

The class will meet one day per week; each meeting will feature a 45-minute lecture, followed by 30 minutes of questions and discussion with the presenter. Short readings will be assigned (by each presenter) one week before each meeting.

Besides providing exposure to current scientific and societal issues in Earth and environmental science for students in a wide range of majors, the class is intended to highlight opportunities in the Earth System Science major track in Geosciences through showcasing important research at the UA by particularly eminent and dynamic faculty and researchers.

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#### Schedule of Presentation and Discussion Topics:

- 26 Aug: [Peter Reiners](#): Introduction and overview of Earth System Science  
2 Sept: [Julie Cole](#): Global warming's evil twin: Ocean acidification and its ecosystem impacts  
9 Sept: [Lisa Graumlich](#): Adapting to Climate Change: What can we learn from the history of drought in the West?  
16 Sept: [Joellen Russell](#): The once and future battles of Thor and the Midgard Serpent or: The ocean's role in global climate  
23 Sept: [Jon Chorover](#): Mixing Up Rock, Soil, and Plants in the Earth's "Critical Zone"  
30 Sept: [Travis Huxman](#): Building the Biosphere - The Evolution of Photosynthesis and the Carbon Cycle  
7 Oct: [Jennifer McIntosh](#): Water and Energy: From Coalbed Methane Generation to CO<sub>2</sub> Sequestration

14 Oct: [Thomas Swetnam](#): The Nexus of Climate, People & Wildfire in the Earth System  
21 Oct: [Jonathan Overpeck](#): Abrupt Climate Change and Societal Impacts  
28 Oct: TBA  
4 Nov: [Julio Betancourt](#): How do plants migrate with climate change? Lessons from the Holocene  
11 Nov: **No class; Veteran's Day**  
18 Nov: [Pete DeCelles](#): Slow-Motion Train Wreck: Building the Himalayas and Tibetan Plateau  
25 Nov: [Jonathan Lunine](#): How does climate change with migrating planets?  
2 Dec: [Andy Cohen](#): Hominins and Humidity: What Can Paleoclimate Records Tell Us About Human Evolution?  
9 Dec: **Final Papers due for Section 002H students**

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## Grading

Grading will be based on weekly, <1-page papers analyzing lectures and discussions (50%), and participation in discussions (50%). Students taking the class for Honors College credit (Section 002H) will write a final paper exploring a particular scientific problem or societal-impact issue raised in the lectures and discussions in greater depth (HNRS students grades will be divided as: 34% weekly papers, 33% discussion participation/leadership, and 33% final paper). Regular or alternative grades can be awarded for this course: A B C D E or S P C D E. Grades will be assigned as follows: >90%: A or S; 80-89%: B or P; 70-79%: C; 60-69%: D; <60%: E.

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## Policies

- Absence policies: Attendance at all lectures and discussions are required, however, the following kinds of excused absences will be permitted: 1) All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion, 2) Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.
- Policies regarding expected classroom behavior (e.g., use of pagers/cell phones); and policies against plagiarism, etc., within Student Code of Academic Integrity will be followed and are available at: <http://dos.web.arizona.edu/uapolicies/>.
- Policies against threatening behavior by students: <http://policy.web.arizona.edu/~policy/threaten.shtml>.
- Students with Disabilities: If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Resources (621-3268; [drc.arizona.edu](http://drc.arizona.edu)) and notify me of your eligibility for reasonable accommodations. I can then plan how best to coordinate your accommodations. More info: <http://drc.arizona.edu/learn/index.html>
- Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.