

## SYLLABUS

Fall 2016

### ENVR 475 & 775 - Global Climate Change: Interdisciplinary Perspectives

Class meets: Tuesdays 5:00-6:15 PM

Location: Murphey 116

Instructor: Jason West, Environmental Sciences & Engineering ([jasonwest@unc.edu](mailto:jasonwest@unc.edu))

Teaching Assistant: Melissa Buechlein, Environmental Sciences & Engineering

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Prerequisites: None. Open to all undergraduate, graduate, and professional students.

Course Credit: 1 Credit.

- All **undergraduate** students must register for ENVR 475 and take the class as Pass/Fail.
- All **graduate** students must register for ENVR 775 and take the class for a grade.

#### Course Description

Climate change has been called one of the most important issues of the 21<sup>st</sup> century. It is a defining challenge for the current generation of students. The Earth's climate is influenced by nearly all human activities. As the Earth's climate changes, it will have widespread effects on human societies and the world around us. Understanding and addressing the issue of global climate change requires an interdisciplinary perspective, as several physical sciences and social sciences interplay.

This course aims to increase understanding of global climate change by approaching it from an interdisciplinary perspective. Students will hear from top experts in a variety of fields on how they approach climate change. The course is organized around five inter-related themes:

- the **science** of climate change and of the human influence on climate,
- the **impacts** of climate change on human society and our environment, and means of adapting to climate change,
- global **energy**, and technological means of addressing climate change,
- **communication** of climate change, and
- climate change **policy** and international solutions.

Through this course, students will learn about our world and human interactions with it, and about the important and pressing issue of climate change. Students will also see how a complex issue like global climate change is approached from different disciplinary perspectives.

This course is designed to spark interest in climate change among students from a variety of majors across the entire UNC campus. The instructor hopes that some students will be inspired by this experience to continue to work on topics related to climate change through their own

disciplines. Students who are majors in Environmental Science, or who already have a focus on climate change in their education, will also find this course worthwhile because of the high quality of speakers that we attract. A more comprehensive understanding of climate change or of particular aspects of climate change can be obtained through more focused classes in a variety of departments.

## **Course Requirements and Evaluation**

**Attendance is mandatory.** The first class of the semester does not count in records of attendance. **Students who have two or more absences will receive a grade of F for the class.**

Attendance will be determined through polls that will be conducted in each class. Students are responsible for registering their phones with Poll Everywhere, by Aug. 30, following instructions from [help.unc.edu/help/poll-everywhere-faq/](http://help.unc.edu/help/poll-everywhere-faq/). Any attempt to cheat Poll Everywhere will be treated as an honor code violation.

Students who arrive more than 10 minutes after a lecture has started, or leave before the lecture has ended, will be counted as being absent for that class. **Use of computers and cell phones is NOT permitted in class, except when taking polls.** Students who are disruptive, who are using cell phones or computers, or doing homework or other tasks will be recorded as being absent for that class.

To make up for an absence, students will be required to review the lecture slides and reading for that class on Sakai, and write a three-page paper on the topic missed in the lecture. Papers should address two themes: an overview of the material covered in the lecture, and the student's own thoughts on some aspect of the lecture and/or reading. Students must submit the paper within three weeks of the absence (or by Dec. 8, if at the end of the semester). Students who write a paper to make up for an absence must write on different topics for the Essay and Final Exam.

**Readings.** At least one short reading will be provided for each lecture on the class Sakai site. Additional readings will also be posted and designated as optional for each class – these optional readings can be useful in writing the Essay and Final Exam.

**Essay.** Undergraduate students (475) are asked to write one two-page essay on the topic of one of the classes from Aug. 30 through Oct. 18. Graduate students (775) have the same requirement, but their essay must be three pages long. Students should review the reading(s) provided for that class period and should reference those readings within their essay. Essays must be typed, single-spaced and at least two full pages with 12 point type and one-inch margins. The essay must be turned in electronically by the beginning of class on Oct. 25. The essay must address one of these themes:

- 1) Discuss what is known or uncertain within the general subject addressed in that lecture. Give your thoughts on how further research might resolve the uncertainties.

- 2) Discuss a serious problem to human society or the environment related to that lecture and suggest how that problem might be resolved.
- 3) Discuss an issue related to that lecture and how your future or current profession can help to resolve that issue.

**Personal Reflection.** In the Personal Reflection, you are asked to write on how your personal attitudes on climate change have changed as a result of the perspectives given in this class. You could focus on climate change science, impacts, energy, policy, or any other aspect of climate change that we discussed in class. The Personal Reflection can take any form that you'd like – use the space to focus on your personal reflections that you think are most important, considering factors such as the importance of climate change for human society and the world around us. The Personal Reflection must be typed, single-spaced and at least two full pages with 12 point type and one-inch margins. The Personal Reflection must be turned in electronically by 5 PM on Thursday, December 8.

**Take-home Final Exam.** The Take-home Final Exam requires students to write an essay following the same format and requirements as the Essay, but students should focus on the topic of one of the last seven classes (Oct. 25 and after). As for the Essay, the Take-home Final Exam should be two pages long for undergraduates (475) and three pages long for graduate students (775). The Final must be turned in electronically by 5 PM on Thursday, December 8.

**Grading. Undergraduate students (475)** will receive a grade of PASS if they satisfy the attendance requirement and receive a passing grade on the Essay, Personal Reflection, and Take-home Final Exam.

**Graduate students (775)** will be graded (H, P, L, or F) on this weighting:

Attendance	25%
Essay	25%
Personal reflection	25%
Take-home final exam	25%

Like the undergraduates, graduate students will be required to meet the attendance requirement, and will receive an attendance grade of 100% for no absences and 85% for one absence. The Essay, Personal Reflection, and Take-home Final Exam will be graded on the extent to which the writing addresses the themes described above, addresses the topic of the lecture (for the Essay and the Final Exam), is well organized and clearly written, and expresses a thoughtful and forward-looking perspective on the issue. Grades will be given on this scale: H  $\geq$  90%, P 80-89%, L 60-79%, F < 60%.

## Schedule

Themes:	Science	Impacts	Energy	Communication	Policy
Date	Topic		Speaker		
Aug. 23	Introduction to class and basics of the Earth's climate		Jason West, UNC Environmental Sciences & Engineering		
Aug. 30	Observations of recent climate change		David Easterling, NOAA National Climatic Data Center		
Sept. 6	Climate change and the global water cycle		Tamlin Pavelesky, UNC Geosciences		
Sept. 13	Projecting future climate change		Drew Shindell, Duke Nicholas School of the Environment		
Sept. 20	Impacts of climate change on marine ecosystems		Karl Castillo, UNC Marine Sciences		
Sept. 27	Climate change and access to clean water		Jamie Bartram, UNC Environmental Sciences & Engineering		
Oct. 4	Climate change and the future of the North Carolina coastal system		Stan Riggs, East Carolina Univ. Geology		
Oct. 11	Cookstoves, forests, health, and climate change in Africa		Pam Jagger, UNC Public Policy		
Oct. 18	Global energy and the technological challenge of reducing global GHG emissions		Lincoln Pratson, Duke Nicholas School of the Environment		
Oct. 25	Climate change and human health		Linda Birnbaum, National Institute of Environmental Health Sciences		
Nov. 1	Seeking a solar energy solution		Tom Meyer, UNC Chemistry		
Nov. 8	Reducing emissions from transportation		Noreen McDonald, UNC City & Regional Planning		
Nov. 15	Ethical perspectives on climate change		Doug MacLean, UNC Philosophy		
Nov. 22	Communicating climate change		Susan Joy Hassol, Climate Communication		
Nov. 29	Forging an international solution		Victor Flatt, UNC Law		
Dec. 6	Economics and the design of policies for climate change		Billy Pizer, Duke Nicholas School of the Environment		