

## **SIO25: Climate Change and Society WI 2019**

Dr. Jane L. Teranes

Lectures: MWF 10:00-10:50am, Cognitive Science Building (CSB) 001

Final Exam: Friday March 22<sup>rd</sup>, 2019, 8am–11am

**Dr. Teranes' Office hours:** Wednesdays 1pm-3pm **Office:** Galbraith Hall 367

I am also available by email and by appointment.

**Telephone:** 822-2099 **e-mail:** [jteranes@ucsd.edu](mailto:jteranes@ucsd.edu) **Course website:** [triton.ucsd.edu](http://triton.ucsd.edu)

### **Your graduate student Teaching Assistants:**

Jacob Morgan ([jdmorgan@ucsd.edu](mailto:jdmorgan@ucsd.edu)) Monday sections

Alan Seltzer ([aseltzer@ucsd.edu](mailto:aseltzer@ucsd.edu)) Wednesday sections

### **OBJECTIVES:**

This course will focus on scientific understanding of global climate change and examination of policy questions. By the end of this course, you should be able to (1) understand and describe the physical basis of climate change; (2) identify and explain global symptoms of climate change (3) be familiar with technological, economic and political solutions for mitigation (i.e. reducing greenhouse gas emissions) and adaptation (4) be able to effectively engage in the public policy debate on climate change solutions and (5) be able to accurately and effectively relate information on climate change to a general public audience.

### **READING:**

**Required Book:** Introduction to Modern Climate Change 2<sup>nd</sup> edition, Andrew Dessler, Cambridge University Press. 2016. This required textbook is available for purchase in the UCSD bookstore. You can also purchase or rent a copy or an etextbook at [amazon.com](http://amazon.com) or several other on-line book providers.

**Additional articles:** We will also read several additional government reports, journal articles and news articles throughout the quarter. Generally, you will access these articles online, and the websites will be provided on the syllabus or added on the course website. The most important of these readings, and how they are abbreviated on the syllabus, are listed below.

- 1) The 2013 Intergovernmental Panel on Climate Change Assessment Report 5 (2013) Working Group 1 Summary for Policy Makers (IPCC AR5 SPM). [https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5\\_SPM\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_SPM_FINAL.pdf)
- 2) The 2018 Intergovernmental Panel on Climate Change Special Report 1.5°C Summary for Policy Makers. (IPCC SR15 SPM) [https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15\\_SPM\\_High\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_High_Res.pdf)
- 3) The 2017 Fourth National Climate Assessment Vol I, Climate Science Special Report (NCA4, Climate Science). <https://science2017.globalchange.gov/>
- 4) The 2018 Fourth National Climate Assessment Vol II Impacts, Risks and Adaptation in the United States (NCA4). <https://nca2018.globalchange.gov/>

### **COURSE POLICIES:**

Students are expected to attend class and remain in class for the duration of the session. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not necessarily relieve a student of any course requirement. Late assignments will not generally be accepted, if you feel that an exception is warranted,

please discuss this with your TA or the instructor. Regular class attendance is a student's obligation, as is a responsibility for all the work of class meetings, including tests and written assignments. I conduct this class in an atmosphere of mutual respect and I encourage everyone's active participation in class discussions. Integrity, honesty and respect are expected of all participants in their relations with other students, TAs and instructors.

**Course Format:**

Class will consist of lecture material, assigned reading, in-class clicker questions, in-class discussion, homework assignments, mid-terms and a final. The lectures and required reading assignments form the significant portion of the class material and in-class clicker questions will regularly assess your understanding of the material. Weekly homework assignments will give you practice and experience with the material in the reading and the lecturers. There are two mid-terms and a final that will assess your overall understanding of the course material.

**i>clicker**

We will be using the i>clicker student response system in class this quarter. Clicker questions will be based on reading assignments and class lecture material. We are using clickers to encourage you to complete the reading assignments before the class period, to keep up with the lecture material, and to engage more fully in the course content. I also use the i>clicker responses to better understand what you have learned from the reading and lecture so that I can review material in class as necessary. Class participation grades, which is your i>clicker points, discussion points and section attendance, is worth 10% of your grade. **You must register your i>clicker in TritonEd.**

Important: I consider bringing a fellow student's i>clicker to class to be cheating and a violation of the UCSD academic integrity code. If you are found to have a i>clicker remote other than your own, or if you have registered points for classes that you did not attend, you will forfeit all your i>clicker points and may face additional disciplinary actions. See below for further statements on academic integrity.

**Academic Integrity Statement:**

Integrity of scholarship is essential for an academic community. This course will adhere strictly to the UCSD policy on academic integrity: "Students are expected to do their own work without unauthorized aids of any kind," as outlined in the UCSD Policy on Integrity of Scholarship. Academic misconduct will not be tolerated, and will result in disciplinary process. For details, see <https://students.ucsd.edu/academics/academic-integrity/ai-and-you.html>.

**Students with Disabilities:**

Your instructor and your TAs are happy to provide accommodations for this course for students with documented disabilities. Students must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to your professor and to Sid Eads, the OSD Liaison in the SIO department (sleads@ucsd.edu) in advance so that accommodations may be arranged.

**Grading:**

10% i>clicker and discussion points

20% Homework assignments (assigned approximately weekly)

30% Two mid-term exams (15% each)

40% Final Exam (cumulative)

Extra credit: Additional campus seminars opportunities will be announced **in class** throughout the quarter.

## COURSE SCHEDULE\*

<b>Date</b>	<b>Topic</b>	<b>Assigned Reading</b>
1/7	Top 10 Climate Stories of 2018 ...and what to expect in 2019	
1/9	Understanding Climate: A Primer	Dessler, Chapter 1
1/11	Who's Responsible?	Dessler, Chapter 1
1/14	How is the Climate Changing?	Dessler, Chapter 2 NCA4, Climate Science Ch.1 IPCC AR5 SPM section B
1/16	Paleoclimate: A Long View of Climate Change	Dessler, Chapter 2
1/18	The Symptoms of Climate Change: Large-Scale Circulation and Climate Variability	Dessler, Chapter 9 NCA4, Climate Science Ch.5
1/21	Martin Luther King Day Holiday <b>No class</b>	<b>No sections this week</b>
1/23	The Symptoms of Climate Change: Extreme weather	Dessler, Chapter 9 NCA4, Climate Science Ch.8 and 9
1/25	The Symptoms: Shrinking Snowpack, Melting Ice	Dessler, Chapter 9 NCA4, Climate Science Ch.11
1/28	The Symptoms: Changing Oceans - Sea Level Rise and Ocean Acidification	NCA4, Climate Science Ch.12 and 13
1/30	The Symptoms: Ecosystems and Agriculture	Dessler, Chapter 9 NCA4 Ch 7 and 10
2/1	<b>Midterm #1</b>	
2/4	The Science: Greenhouse Gases and the Greenhouse Effect	Dessler, Chapter 5, section 5.1
2/6	The Science: Radiation and Energy Balance	Dessler, Chapter 3 NCA4, Climate Science Ch.2 IPCC AR5 SPM section B and C:
2/8	The Science: A simple climate model	Dessler, Chapter 4
2/11	The Science: The Carbon Cycle	Dessler, Chapter 5 Nat Geo: The Carbon Bathtub ( <a href="http://ngm.nationalgeographic.com/big-idea/05/carbon-bath">http://ngm.nationalgeographic.com/big-idea/05/carbon-bath</a> )
2/13	The Science: Climate Forcing, Feedbacks and Sensitivity	Dessler, Chapter 6 Reread: IPCC AR5 SPM section C
2/15	The Science: Putting it all together	Dessler, Chapter 7 NCA4, Climate Science Ch.3 IPCC AR5 SPM section D
2/18	Presidents' Day Holiday <b>No class</b>	<b>No sections this week</b>
2/20	What the Future Holds: Climate Scenarios	Dessler, Chapter 8 NCA4, Climate Science Ch.4 IPCC AR5 SPM section E.1-7

SIO 25 Climate Change and Society Syllabus, WI 2019, Jane Teranes

2/22	What the Future Holds: Climate Stabilization, Climate Change Commitment and Irreversibility	Dessler, Chapter 10 IPCC AR5 SPM section E.8
2/25	Climate Change Solutions: A Primer	Dessler, Chapter 11
2/27	Climate Change Solutions: Adaptation	NCA4 Ch. 28
3/1	<b>Midterm #2</b>	
3/4	Climate Change Solutions: Mitigation	Dessler, Chapter 12 NCA4 Ch. 29
3/6	Climate Change Solutions: Climate Science and Policy The Paris Climate Accord	Dessler, Chapter 13 NCA4, Climate Science Ch. 14
3/8	Climate Change Solutions: What will it take to “fix” the climate?	Dessler, Chapter 14
3/11	Understanding the impacts of 1.5°C warming	IPCC SP15 SPM Sections A-C
3/13	The impacts of 1.5°C warming and the sustainable development goals	IPCC SP15 SPM Sections D
3/15	University of California report – Bending the Curve	Bending the Curve Executive Summary
<b>3/22</b>	<b>Final Exam 8:00 AM</b>	

**\*Note:** The schedule of topics and assignments set forth in this syllabus is tentative and may be modified as needed throughout the quarter. In particular, additional required reading may be assigned. Notice of such changes will be by announcement in class or by written or email notice and any updates or changes to this syllabus will be posted on the course website at [TritonEd.ucsd.edu](http://TritonEd.ucsd.edu).