



SIO 25 Course Syllabus

Instructor: Yassir Eddebbar



SIO 25: Climate Change and Society [4 units] - **Quarter:** Summer Session II, 2016
Time: MW 2:00-4:50 pm - **Location:** YORK 4080A **Final Exam:** Friday Sept 2, 2:00 pm.

Office Hours: Monday & Wednesday 11:00 am - 1:00 pm **Office:** Galbraith 364
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“This is the carbon dioxide problem. This problem is virtually unique among human-induced problems, and heaven knows we have enough of them” - Roger Revelle

Course Overview

As Roger eloquently points out, climate change is a **unique** environmental problem, because it represents 1) a **long-term** phenomenon, that is 2) **global**, i.e. involving everyone, and 3) is full of **uncertainties** and complexities. In this class, we will explore questions that are nearly all influenced by those characteristics:

- 1) Is climate changing? Why is it changing? How is it changing? What is the role of humans vs. nature?
- 2) How are ocean, terrestrial, and human systems impacted by these changes? How (un)certain are we?
- 3) What are technological and economic options and political challenges to solving this? Can we adapt?

We will learn that this scientifically and socially complex problem calls for creative thinking and new ideas, coupled to massive changes in our energy, industrial, urban, and economic systems.

Course Goals & Outcomes:

Through lectures, discussions, field trips, and project assignments, we will learn to:

- 1) **Understand and evaluate the scientific evidence behind climate change and its uncertainties**, including: i) changes in atmospheric composition, ii) the greenhouse effect, iii) climate feedbacks, 4) observed changes on land, ocean, atmosphere, and poles, and 5) future climate model predictions.
- 2) **Develop interdisciplinary thinking to address complex human-environment problems**; Specifically, translate how climate change may impact human systems, and assess creatively and critically existing and proposed technological, economic, and policy instruments, solutions, and challenges.
- 3) **Communicate clearly and accurately on scientific and policy topics to a wide audience**; Write concisely and critically about different aspects of climate change (science and policy), considering pros and cons (e.g. weigh countries's political, economic, and technological limitations and advantages).

Reading:

Reading assignments are essential to succeeding in this course and are tested for in the final exam and during quizzes at beginning of each class, including:

- 1) **Required Textbook:** “The Thinking Person’s Guide to Climate Change”, Robert Henson, American Meteorological Society, 2014.
- 2) **Articles:** Made available for each respective week on tritoned (tritoned.ucsd.edu)

Quizzes & Attendance:

A 5 min quiz based on reading assignments will be given at the beginning of every class at 2:00 pm sharp. Class attendance on time is required, is part of participation grade, and is recorded through quizzes.

Participation:

We will cover a variety of multi-faceted and dynamic topics. With such diverse academic and personal backgrounds, your questions and comments are integral to the course. Don't be shy and join the discussion.

Final Exam:

A cumulative final exam will take place on **Friday Sep 2, 2:00 pm at York 4080A**, and will test you on accumulated knowledge and understanding of material covered throughout the course, including lectures, discussions, readings, and the quarter project. Please plan your schedules accordingly, no earlier date option.

The Quarter Project:

Instead of midterms, we will conduct a 3-parts "Quarter Project". This will give you the opportunity to dive in details into a science topic and country of your choice. Recent IPCC reports and papers cited therein can be used as references, will be made available on **tritoned**, and can be accessed here: ipcc.ch/report/ar5/. The 1st report covers the "Physical Science Basis", the 2nd report covers "Impacts and Adaptation"; and the 3rd report covers "Mitigation". Countries climate plans (or "INDCs") will also be made available on **tritoned** and can be accessed on the **unfccc** website. The quarter project consists of 3 graded milestones:

- 1) Project Proposal (20 pts):** consists of a brief ~250 words abstract of proposed scientific topic and country of your choice. Must include a list of references to be used (specific IPCC chapters and papers). Think creatively and carefully about coherence of topics and country of choice (e.g. Iceland/ice sheets; India/rainfall; Kiribati Islands/sea level rise; Qatar/surface warming). **Due Friday 11:59pm, week 2.**
- 2) Science Paper (40 pts):** Complete a 1000-word review of a specific scientific topic of climate change based on IPCC reports and scientific papers. **Due Friday 11:59pm, week 3.**
- 3) Policy Paper (40 pts):** Review country's historical emissions, economic status, relevant climate impacts, and mitigation plans (e.g. INDC), and draft a 700-word summary policy memo to its leadership with policy recommendations. Must also include previously submitted science paper as an appendix, addressing revisions and feedback. **Due Friday 11:59 pm, week 4.**

More details (list of topics, countries, templates, outlines, grading criteria, etc.) will be provided under the Quarter Project Guidelines document to be made available in class and on **tritoned**. All work must be: 1) original and use proper citation formats, and 2) submitted through **tritoned**, which will be reviewed online for plagiarism. Plagiarism is not tolerated and will lead to serious disciplinary actions.

Grading:

15% Participation (discussion & attendance); 15% Quizzes; 30% Final Exam; 40% Quarter project.

Extra credits (extra 5% choose one):

- 1) Visit the Birch Aquarium Climate Change Exhibit and write a 750 words thoughtful essay about exhibit's main features, and provide a constructive criticism of the exhibit (what works and what can be improved).
- 2) Watch a videos from the suggested extra-credit video list on tritoned; and write a 750 words overview of main points and your personal reflection on the movie.
- 3) Review a classic climate paper from the extra-credit selection posted on tritoned, and write a 750 page summary of the main points.

Essays must be thorough and detailed; extra-credits will be voided if the essay doesn't address the entire exhibit, film, or paper.

Course Format & Rules:

1. **Class consists of two 75 min lectures and discussion**, broken by a 15 min break. A 5 min reading assignment quiz is conducted at the beginning of every class at 2:00 pm sharp.
2. **Discussion** will be conducted throughout lectures. Lottery system may be used to broaden participation.
3. **Lecture slides and reading** will be made available on **tritoned** for each respective week.
4. **Class attendance** is mandatory, and is recorded through quiz participation. The course builds on cumulative knowledge. Skipping a class will drastically impact your progress and grade. Excused absences are dealt with on a case by case basis and require written documentation and full verification.
5. **Late assignments** will not be accepted.
6. **Phone and laptop usage** is highly distracting to everyone and are not tolerated during class.
7. **Deadlines:** Late add a course or receive Course fee refund without "W" by August 5. Drop course without "W" (no refund) by August 12. Drop course with "W" by August 30.
8. The class will be conducted in an environment of **mutual respect and integrity**. Misconduct and disruptions (e.g. chatter, texting/cellphone use, arriving late, leaving early, etc.) will not be tolerated.

Academic Integrity:

Academic integrity stands for principles of honesty, originality, and self reliance in every aspect of academic life. Student are expected to follow UCSD policy on academic integrity, including, but not limited to:

"No student shall complete examination or assignment for another person; or knowingly allow any examination or assignment to be completed for himself or herself by another person; plagiarize or copy the work of another person and submit it as his or her own work; use aids excluded by the instructor in undertaking course work or in completing any exam or assignment; alter graded class assignments or examinations and then resubmit them for regrading; submit substantially the same material in more than one course without prior authorization." as detailed by the UCSD Policy on Integrity of Scholarship, available here <http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>.

Violation of UCSD academic integrity policy and any misconduct during class may lead to serious disciplinary action.

Course Schedule			
Week	Date	Topics	Reading / Assignments Due
1	M: Aug 1	Part I: Course Syllabus Overview Part II: Climate Change and Society: An Overview	Henson Ch 1. Climate Change: A Primer
	W: Aug 3	** Field Trip to Scripps Institution of Oceanography: Meet in front of the Scripps Pier at 2:00 pm. Part I: Scripps Pier & CO2 Lab. Atmospheric composition Part II: The Science and History of the Keeling Curve. by Ralph Keeling (Hubbs Hall 4500, SIO campus).	C.D. Keeling. 1998. "Rewards and Penalties of Monitoring the Earth." pp 31-42 Henson Ch 3
2	M: Aug 8	Part I: The Greenhouse Effect Part II: Earth Energy (Im)Balance & Planetary Warming	Henson Ch 2. Henson Ch 10, 11
	W: Aug 10	Part I: Climate Feedbacks Part II: Symptoms: Land, Water, and Poles **Proposal paper due Friday 11:59 pm	Henson Ch 4, 5, 6
3	M: Aug 15	Part I: Symptoms: Oceans Part II: Future Impacts: Model Projections	Henson Ch 7, 8 Henson Ch 12.
	W: Aug 17	Part II. Impacts on Human Systems Part I: Controversies and Uncertainties **Science paper due Friday 11:59 pm	Henson Ch 9, Henson Ch 13.
4	M: Aug 22	Part I: Mitigation: Technology and Energy Solutions and Challenges Part II: Mitigation: Economic Solutions and Challenges	Henson, Ch 14 & 16 Victor, 2013.
	W: Aug 24	Part I. Adaptation: Living with climate change Part II. Monitoring Climate: Vital Signs, Guest Lecture: Charlie Kennel **Policy paper due Friday 11:59 pm	Henson, Ch 15 Victor and Kennel, 2014. Briggs, Kennel and Victor, 2015.
5	M: Aug 29	Part I. Climate Policy: Local, State and Federal efforts Part II. Why International Climate Policy Fails and How to Fix It. Guest Lecture by Dr. David Victor	UNFCCC & Paris Agreement. Keohane and Victor. 2016
	W: Aug 31	Part I: Individual actions and communicating climate change Part II: Final Review	Henson Ch 17-21.
	F: Sep 2	Final Exam 2:00 pm	
<p>*M=Monday; W=Wednesday; F=Friday **Part I: 2:00-3:20 pm (quiz 2:00-2:05) - Part II: 3:30-4:50 pm ***Schedule is tentative and may change throughout quarter. Any changes, including readings, topics, assignment due dates, will be communicated through your ucsd email, tritoned.ucsd.edu, and/or in class</p>			