"When we try to pick out anything by itself, we find it hitched to everything else in the Universe."
– John Muir, 1911 (My First Summer in the Sierra)

"It is only recently that [humans] have begun to consider how they can reconcile human needs for energy with the finiteness of the Earth. Such a reconciliation will engage all the institutions of human society."

Welcome to Energy and the Environment! This is a required course for all Environmental Studies Students (BA and BS), and a useful and informative course for all others concerned with basic issues surrounding the environment, the global economy, and major social problems. We will learn a number of scientific and quantitative concepts as well as historical and social ones as they relate to energy. A continuing theme throughout the course will be an emphasis on energy efficiency. It is our hope that you will take from this course a deeper understanding of energy and some of the basic laws of thermodynamics, and apply them to your skillset as you venture into this rapidly changing world.

~ Quentin and Mel

### Course Goals

Throughout the quarter, students will develop an understanding of and justification for the following claims:

1. The laws of thermodynamics are a central organizing principle for the environment, science, industry, and the overall economy.
2. Energy and entropy provide an integrative capability for addressing environmental problems.
3. The basic and more complex scientific underpinnings of climate change represent serious technical and social challenges for global human society and for the United States.
4. Energy production, distribution, and use are a major contributor to social injustices that are prevalent in today’s societies, including racial, gender, socioeconomic, and geopolitical.

### Lectures

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<th>Day</th>
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<th>Location</th>
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<tr>
<td>TR</td>
<td>5:00pm – 6:15pm</td>
<td>Buchanan 1910</td>
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Attendance is required and recorded

### Instructors

- Quentin Gee, PhD  [qgee@es.ucsb.edu](mailto:[qgee@es.ucsb.edu](mailto:qgee@es.ucsb.edu))
- Mel Manalis, PhD  [manalis@es.ucsb.edu](mailto:[manalis@es.ucsb.edu](mailto:manalis@es.ucsb.edu))
- Monday 12-2 (ES Priority)
- Tuesday 12-2 (Phil priority)
- Bren 4005

### Teaching Assistants

- Taylor Briglio  [taylorbriglio@umail.ucsb.edu](mailto:[taylorbriglio@umail.ucsb.edu](mailto:taylorbriglio@umail.ucsb.edu))
- Victoria Greenen  [vgreenen@umail.ucsb.edu](mailto:[vgreenen@umail.ucsb.edu](mailto:vgreenen@umail.ucsb.edu))
- Lydia Rudnick  [lrudnick@umail.ucsb.edu](mailto:[lrudnick@umail.ucsb.edu](mailto:lrudnick@umail.ucsb.edu))
- Monday 230-430
- Wednesday 10-12
- Bren 4010

### Course Website

All major course Content will be posted on Gauchospace. This includes key slides from lectures, online readings, homework questions, and review guides.

https://gauchospace.ucsb.edu/

Please email me (Quentin) if you need assistance with Gauchospace

### i>Clickers

i>Clickers will be used to take attendance as well as enhance student participation and comprehension of key issues. It is your responsibility to have an i>Clicker and use it regularly. Leaving lecture early or arriving late may affect your i>Clicker score. You will have two (and only two) i>Clicker days dropped regardless of excuses. **Please do not ask for exceptions beyond this** except in circumstances when you have permanently lost your i>Clicker and need to register a new one.
### Required Readings
Reading assignments will be made on Mondays and Posted on Gauchospace. There are several sources of your required readings:
1. Course Chapter PDFs (1-5) (Posted on Gauchospace sequentially)
2. **[BSM] Beyond Smoke and Mirrors, 2nd Edition** by Burton Richter (Available at UCSB Bookstore)
3. **[HOP] Hot off the Press – Recent and important news Stories** (Posted on Gauchospace). All HOP articles must be read during the week they are listed, and are fair game for tests.
4. **Coal: A Human History** by Barbara Freese (Available at UCSB Bookstore)

### Homework Problems
There will be two homework assignments posted to Gauchospace, one for the first half of the class, and one for the second half of the class. You should complete HW questions as we run into them in lecture and while you’re doing your readings.

We will verify your homework completion by you taking a homework quiz on Gauchospace. After you have completed all problems for the given HW assignment, you can begin the Gauchospace quiz, and will have 30 minutes to answer questions based on the HW questions. See the “Homework Quiz Info” document on Guachospace for more information.

### Exams
Exams will cover lectures, readings, homework problems and quiz questions. There will be two exams. The final exam is not comprehensive.

### Grading
Your grade will be assigned as follows:

<table>
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>i&gt;Clicker</td>
<td>10%</td>
</tr>
<tr>
<td>Section Grade (attendance, participation, HW Quizzes)</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam (not comprehensive)</td>
<td>30%</td>
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*To pass the class, you must earn at least an average of 50% on your exam scores.*

### Diversity Statement
This course is designed in part to help you understand broader issues in society that relate to social harms and potential benefits to traditionally disenfranchised or otherwise marginalized groups of people, particularly involving gender and racial issues at the international level, as well as socioeconomic trends in the United States. Addressing these issues requires an open mind to forms of institutional failure and mechanisms for empowerment from both a historical and a future-oriented perspective. It is our hope that you take these problems and their causes to heart, and think about such broader patterns throughout your academic, intellectual, and personal development.

### Academic Integrity Statement
We treat you as adults who are honorable people. If special problems come up, see your TA, ASAP.

*Academic dishonesty assaults the basic integrity and meaning of a University.* Cheating, plagiarism, and collusion are serious acts that erode the University’s educational role and debase the learning experience not only for perpetrators, but also for the entire community. It is our expectation that students in ES115 will understand and subscribe to the ideal of academic integrity and that they will bear individual responsibility for their work. Materials (written or otherwise) submitted to fulfill academic requirements must represent a student’s own efforts. *Any act of academic dishonesty attempted by any UCSB student is unacceptable and will not be tolerated.* This does not mean you can’t talk about your work with other students and brainstorm, etc., but when it comes to *doing* your work, it must be your own. We encourage Students, TAs and Faculty to interact as much as possible on academic subjects of mutual interests.