OCN 310, ATMO 310: Global Environmental Change

Mon Wed Fri 9:30 – 10:20, Marine Science Building 100
Syllabus for Fall 2017

Instructor: Dr. Michael J. Mottl, mmottl@soest.hawaii.edu  956-7006
Teaching Ass’t: Carleigh Vollbrecht, carleigh@hawaii.edu (MSB 409; Hrs by appt.)

Course Description
Global Environmental Change is one of the most pressing issues of our time. The increase in human population, estimated to have reached seven billion in late 2011, and the consumption of natural resources to feed, house, clothe, and provide energy for this growing world population, have placed enormous stress on the natural systems which support us. How did humanity arrive at this crisis? How are we feeding seven billion humans? Have we exceeded the carrying capacity of our planet? The answers to these questions are inevitably linked to our use of energy to power our civilization, and particularly to its source. We will explore both the practical and the ethical considerations of the use of energy and other resources, both renewable and non-renewable, and their implications for sustainability.

Global Environmental Change involves both the physiochemical and biological nature of change and the effects and consequences of natural and human-induced change for ecosystems, humans, and human infrastructure. Earth’s ecosphere or exogenic system—the Earth surface system of land, water, biota, air, ice, and sediments—has always been in a dynamic state of change from a variety of causes. We will explore the natural causes of environmental change over geologic time to provide a context for the human-induced change we are presently experiencing. We will consider the geochemical cycles of C, O, N, and P, which are key to sustainability and climate change. We will investigate the present consequences of change, along with a variety of feedback mechanisms, both chemical and physical, which operate on a wide range of time scales in determining the course of Earth’s physiochemical environment.

Focus on Contemporary Ethical Issues (E-Focus Designation)
This course has a Contemporary Ethical Issues (E) Focus designation. Contemporary ethical issues are fully integrated into the main course material and will constitute at least 30% of the content. At least 8 hours of class time will be spent discussing ethical issues. Through the use of lectures, discussions, and assignments, students will develop basic competency in recognizing and analyzing ethical issues, responsibly deliberating on ethical issues, and making ethically determined judgments.
Evaluation
The course will consist of lectures, six homework assignments, three discussion sessions, two midterms and a final exam, and an optional 5-min. student presentation. Homework assignments must be submitted in class on the due date to receive full credit. Assignments turned in one class session after the due date will receive an automatic 20% reduction. No assignments overdue by more than one class session will be accepted unless prior arrangements have been made. The three class discussion sessions will be conducted during class time (see schedule). The class will be separated into smaller groups and each group will discuss assigned readings and the related ethical issues. Students may be asked to write a one- to two-page summary of the readings to be used as a basis for group discussion. This write-up, along with participation in the group sessions, will count toward the final grade. Grades will be assigned as
- 60% for three exams (20% each)
- 20% for six homework assignments
- 20% for class attendance and participation in discussions
- 5% extra credit for those who make a 5-min. oral presentation to the class, chosen from a list of topics and dates shown on the Schedule.

Adherence to Student Conduct Code
Students are reminded to adhere to the rules set forth in the Student Conduct Code, and not engage in cheating, plagiarism, or other forms of academic dishonesty. Those found to violate the rules will receive a failing grade and be reported to the Office of Judicial Affairs.

Text required for the Course
Fixing Climate: What Past Climate Changes Reveal about the Current Threat—and How to Counter It by Wallace S. Broecker and Robert Kunzig (2008). Hill and Wang, a Division of Farrar, Straus, and Giroux. ISBN-13: 978-0-8090-4502-0. (There will at least one question from this book on each exam.) Supplemental readings will be provided, including those relevant to the Ethics Focus Designation.

Student Learning Outcomes
Upon completion of OCN 310 a student should be able to:
- Identify and summarize human impacts on the global environment.
- Use simple calculations to understand and illustrate the dynamics of global carbon, nitrogen, and oxygen cycles.
- Evaluate and use scientific data to explain sources of environmental variability and climate change over a wide range of time scales.
- Critically evaluate and discuss current media coverage of climate change.
- Evaluate the ethical issues pertaining to global change.
The University of Hawai‘i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:

As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, contact the Title IX office directly (Hawai‘i Hall 124, 2500 Campus Road (808) 956-2299) or use the confidential resources available here: http://www.manoa.hawaii.edu/titleix/resources.html#confidential

If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support, contact: Dee Uwono Title IX Coordinator (808) 956-2299 t9uhm@hawaii.edu