OCN 120 Global Environmental Challenges

3 Credits
Wed. 1-3:45pm
Hale Imiloa 122

INSTRUCTOR: Dr. Floyd W. McCoy
OFFICE: Hale Imiloa 115
OFFICE HOURS: Mon. 2:00-5:30; Tues. & Thurs. 2:30 – 3:30
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EFFECTIVE DATE: Spring, 2018, CRN 62405

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Global environmental change is a subject area of considerable interest today. The subject matter is now being addressed regularly by scientists, teachers, policymakers, economists, sociologists, lawyers, and the general public. Resulting discussions are being held at local, regional, state, national, and international levels. These discussions have become increasingly heated and in many cases based on emotional responses to fear of the unknown future. There is a growing need for increased scientific literacy among the public as individuals are thrust into the scientific realm through everyday individual choices ranging from which Energy Star appliance to buy to whether to encourage their representatives to support climate change legislation. The aim of this course is to provide students with little to no college level science background an understanding of the nature of science and scientific inquiry, and to train them to think "scientifically" about the major environmental issues we face today. Course material will focus roughly equally on three goals: **1**) Mastery of some basics: understanding the scientific method and critical inquiry; learning the basic tools that scientists use, including mathematics, graphs, and elementary statistics; and mastering selected fundamentals of chemistry, physics, and, to a lesser extent, biology that are needed to explore environmental issues; **2**) Examination of several major environmental challenges selected from topics such as population growth, energy supplies and rates of use, climate change, water resources, loss of ecosystems and biodiversity, etc. Students will learn how the scientific principles and tools mastered in the course are used in understanding the environmental challenges society is facing and in quantifying the impact humans are having on natural earth system processes; and **3**) Investigation and critical evaluation of potential solutions to the environmental challenges. The course wrap-up will consider the many ways in which our environmental challenges are interrelated and linked to fundamental issues of sustainability.

Activities Required at Scheduled Times Other Than Class Times

Homework problem sets, short essays as reaction papers to speakers, possible group projects for in-class discussion, journal news items – all will require significant awareness of current events related to global and local environmental alteration in response to anthropogenic inputs. See below under Course Tasks.

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

1. Apply scientific principles and methods to describe natural Earth system interactions and human impacts on the environment.
2) Solve very basic problems involving chemistry and physics, and read and create graphs of data.
3) Apply scientific principles and methods to compare causes of environmental problems and impacts of potential solutions to environmental challenges.
4) Apply scientific principles and reasoning to critically evaluate proposed explanations for global environmental challenges.

COURSE CONTENT

Concepts or Topics)

- Scientific Method
- Forces of Change
- Population Trends and Growth
- Energy Sources, Consequences, Issues
- Water Cycle, Budgets, Issues
- Climate, Greenhouse Gases & Effects
- Carbon Cycle
- The Ocean's Response & Role in Climate Mediation

Skills or Competencies

1. Maintain awareness of current events related to global and local climate issues as reported in the popular/scientific literature and electronic media.
2. Understand then present climate change issues through composition and oral presentations.
3. Relate issues surrounding climate alteration to cultural issues, past and present.
4. Comprehend the science underlying climate.

COURSE TASKS and FORMAT

Class time will be split between lectures, invited speakers, and group discussions in a seminar format. It is vital that students regularly attend class – note below that a proportion of your final grade will be based upon attendance. Please check your UH email account regularly for updates and changes, of which there may be many especially where invited speakers may have to alter their schedules at the last moment before their scheduled appearance in class.

Class format will follow a symposium style in a symposium setting. Invited speakers will present discussions of different aspects of climate change from science to anthropogenic impacts – we listen, discuss, and argue. But we finish by understanding those impacts for our future.

Reaction papers will be required following speakers and class discussions following the speakers (usually the class meeting following that speaker's presentation) – these will 300-600 word essays that express your comments, opinions, and reaction to the subject presented by the speaker with respect to global environmental challenges. Submittal may be either on paper in class, or via email to fmccoy@hawaii.edu.

ASSESSMENT TASKS AND GRADING

20% attendance
20% class participation
60% reaction papers following speakers

LEARNING RESOURCES

Fletcher, C., 2013. Climate Change. What the Science Tells Us. Wiley, 265pp.

Additional Information

The science of global climate change represents the most dynamic concentration in scientific research today. Study involves every field of science and engineering. But of all the influencing foci in this change, the ocean is by far the most significant – and the most unknown. Everything affecting the land and atmosphere will ultimately impact the ocean. Recall that seawater mantles two-thirds of this planet's surface, thus is the major player in climate science. And thus this course identified as a course in oceanography. Satellites now allow easier data gathering on the oceans. We no longer depend entirely upon ships braving the seas for collecting information – but satellites really "see" only the surface of the ocean. Deep waters are, however, the vast proportion of the oceanic realm, and still require shipboard data gathering. There are what-we-call proxy data that can infer something about the deep ocean, but inadequately to base our future upon. Proxy data also are our source for understanding climates of the past. That past is our key to our future.

All of this will be imbedded in this course. Understanding the science will be key, and that science must be presented for the non-scientist devoid wherever feasible of scientific nomenclature. In addition we must focus on the anthropogenic impacts to us and our culture and our well-being.

DISABILITIES ACCOMMODATION STATEMENT

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.