

OCN 101: Introduction to Environmental Science and Sustainability
Fall 2017

Instructor: Dr. Michael Cooney (956 7337; mcooney@hawaii.edu). Office hours @ POST 104B by appointment.

Lecture Schedule: Lectures (M, W), Active Learning Discussion (F). 1:30 – 2:20, Watanabe Hall 420

Course Objective. Environmental science is interdisciplinary; it embraces a wide variety of topics taken from a number of disciplines. Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science. In particular the application of sustainability. The goal of this Environmental Science course is to provide students with a basic foundation in scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. More, this course is also designed to instruct students on how they can apply this knowledge to active careers pursuing sustainability in traditional degree disciplines.

Course Description. This course will introduce students to the basic principles of environmental science and sustainability as they apply to analysis of environmental systems on a global scale. The integrated natures of ocean, terrestrial and atmospheric systems will be introduced by first introducing the Earth's major ecosystems and biomes and then discussing their coupled contribution to global regulation of climate and atmosphere composition. The course will also cover causes of ecosystem and biome degradation including pollution, land use, coast degradation as well as means to mitigate these causes such as environmental law, environmental economics, and renewable energy. The concepts of sustainability will be infused into the course with an emphasis on the importance of sustaining resources and mitigating pollution to ecosystems and how students can pursue this goal in traditional degree disciplines. In particular, sustainability will be approached from the perspective of the impact that 9 billion or more people will impose upon the planets resources and ecosystems.

Materials: Course notes, reading and lecture material will be posted via LauLima.

Alignment with Manoa ILO's. This course is particularly aligned with ILO 3c: Stewardship of the national environment (respect for natural resources and sustainability). Also, ILO 3a: Continuous learning and personal growth (life-long learning, ethical behaviors and judgements). Also ILO 2a: Think critically and creatively (applying questioning and reasoning, generating and exploring new questions, being information literate).

Structure: Two 1-hour lectures and one 1-hour active learning lecture/discussion per week.

Grading: Letter, two midterms, one cumulative quiz (spread out over the Friday Sustainability Active Learning Unit Training classes), and one final.

Midterm 1:	25%
Midterm 2:	25%
Quizzes:	25%
Final:	25%

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Syllabus: OCN 101 Environmental Science and Sustainability

8/21, M. 8/23, W. 8/25, F.	Lecture 1: Environmental Science: The key science underlying sustainability Lecture 2: Ecosystem Activity: Producers, Consumers, Decomposers Sustainability Active Learning Unit Training (SALUT) 1: Sustainability
8/28, M. 8/30, W. 9/1, F.	Lecture 3: Natural Resources Lecture 4: Human Population Growth: The key catalyst for sustainability SALUT 2: Human population growth
9/4, M. 9/6, W. 9/8, F.	Labor Day Lecture 5: Principles of Ecology SALUT 3: Ecological Succession
9/11, M. 9/13, W. 9/15, F.	Lecture 6: The Atmosphere Lecture 7: The Atmosphere SALUT 4: Global Warming
9/18, M. 9/20, W., 9/22, F.	Lecture 8: The Oceans Lecture 9: The Oceans SALUT 5: Oceans and Human Health
9/25, M. 9/27, W. 9/29, F.	Lecture 10: Biogeochemical Cycles Lecture 11: Mater Recycling SALUT 6: Resource Recycling and Sustainability
10/2, M. 10/4, W. 10/6, F.	Lecture 12: Ecosystems Lecture 13: Ecosystems SALUT 7: Ecosystem Services
10/9, M. 10/11, W. 10/13, F.	Lecture 14: Ecosystem Services Lecture 15: Biomes SALUT 8: Biomes and Human Activities
10/16, M. 10/18, W. 10/20, F.	Exam I Lecture 16: Land Use & Degradation SALUT 9: Building Sustainable Cities
10/23, M. 10/25, W. 10/27, F.	Lecture 17: Biodiversity Lecture 18: Biodiversity Crisis SALUT 10: Conservation Management
10/30, M. 11/1, W. 11/3, F.	Lecture 19: Energy Lecture 20: Energy SALUT 11: Sustainable Energy
11/6, M. 11/8, W. 11/10, F.	Lecture 21: Pollution SALUT 12: Collapse of Bee Colonies Veteran's Day
11/13, M. 11/15, W. 11/17, F.	Lecture 22: Environmental Economics Lecture 23: Environmental Law SALUT 13: Environmental Justice
11/20, M. 11/22, W. 11/24, F.	Lecture 24: Earth Systems SALUT 14: Shifting Baselines Non Instructional Day (Thanksgiving weekend)
11/27 11/29 12/1	Lecture 25: Coastal Degradation Wednesday: Exam II SALUT 15: Resiliency
12/4 12/6 12/8	Review Lecture 26: The Anthropocene Era Study Week
12/11 – 12/15	Exam Week