

ENVIRONMENT AND HEALTH
EVR 4934/5935
FALL 2007
M/W 5-6:15 PM

Instructor: Dr. Riach

E-mail: riachj@fiu.edu

Office hours (ECS 335): TBA

Course Description:

This course introduces students to interdisciplinary approaches to studying and addressing the interconnections between environment and health. It addresses the issue of how human population growth and movement, economic growth, intensification of agriculture, industrialization, social inequality, and culture change can impact health directly and indirectly. The mechanisms by which these social factors contribute to the alteration and degradation of the world's ecosystems are described and explained. The course analyzes how these changes threaten biodiversity, reduce the availability of critical natural resources and ecological services, and contribute to the increased abundance and distribution of infectious and non-infectious disease among all species. The structure of the course combines lecture, guest speakers, and in-class discussion to become familiar with, and to critically assess, the state of knowledge of the topic and identify areas in need of additional research.

Upon successful completion of this course student will be able to:

- Identify and explain the status of some of the social and ecological trends of regional and global scale most threatening to health and well-being
- Explain and apply conservation medicine and the ecosystem approaches to analyze inter-relationships between various social, cultural and ecological factors and the health of humans and other species
- Model direct and indirect causes of environmental changes change and their health implications among specific cultural communities and populations of other species
- Develop strategies for research and redressing of environmental and health problems in a sustainable manner

CE 6:

This class is web assisted. All students will be assigned a CE 6 account for online access to the course, which will contain online reading materials, lecture supplements, professor e-mail access, assignment submission tools, and suggested links.

Readings and study activities:

All readings for the course are provided in a reader that will be available in the library. Students will be able check out and photocopy readings as necessary. Some of the readings and additional video lectures will also be available online through CE 6. Most of the readings are short (2-15 pp.) with only a few readings exceeding 20 pages in length. Several study activities will be assigned to help students combine and apply material from the readings with additional online research to stimulate insightful in-class discussions about the topics.

Exam:

There will be one take-home midterm exam. Students will have one week to complete the exam. It will assess understanding of the problem, the research approaches and study designs covered in class, and the mechanisms by which environment and health are interconnected.

Poster presentation

Students are required to present a professional quality poster structured around the topic of environment and health. Students can select a particular type of health concern related to environmental conditions and apply an ecosystem approach to assess its causal factors and to justify an intervention program to successfully and sustainably redress the problem. They can also choose instead to provide a critical overview of the contributions of conservation medicine and ecosystem approaches as means of addressing environment and health problems. The poster does not have to be printed on a single sheet, but should be of good enough quality to be presented in professional conferences. It should include an abstract, text, graphics, references, and a concise verbal presentation. It can be supplemented with a laptop presentation and handouts. Posters will be presented jointly in several poster sessions at the end of the semester.

Grading:

Study Activities (8): 20%

Take-Home Midterm Exam: 30%

Poster Presentation: 35%

Class participation: 15%

SCHEDULE

1. Introduction

August 27-29: Introduction to class and to “The Problem”

Readings: Parasites, progress, and the past; Biodiversity and human health; The issue

September 3: Labor Day Holiday – No Classes

2. Approaches and Study Designs

September 5: Alternative approaches for dealing with the problem

Readings: Defining conservation medicine; Conservation medicine; The approaches; Epidemiological study designs

3. Earth’s Biological and Physical Systems and their Effect on Health

September 10-12: Biodiversity and health

Readings: Biodiversity; Ecosystem services; Medicines from natural sources; The value of plants, animals, and microbes to medical research; The role of biodiversity in world food production

September 17-19: Ecosystems and health

Readings: Why do ecosystems matter to human health? How have ecosystems changed and what are the health implications? How might ecosystems change and what would be the health implications?

September 24-26: Oceans and health

Readings: Healthy oceans healthy humans; Ocean and human health white paper

October 1: Climate change and health

Readings: Global climate change and health: an old story writ large; International consensus on the science of climate and health; Oceans, climate change and human health

SPECIAL: Environmental Studies Graduate Seminar

October 3: Environmental, Humanitarian, and Educational Projects in the Peruvian Amazon

4. *Mechanisms of Cause and Effect*

October 8-15: Emerging infectious diseases

Readings: Emerging infectious diseases: a key role for conservation medicine; Analysis of top 10 EID threats; Emerging infectious diseases of wildlife – threats to biodiversity and human health; Emerging infectious diseases of plants caused by extreme weather events and “pathogen pollution”; Emergence of infectious diseases in marine mammals; Avian influenza: Current situation

TAKE HOME MIDTERM EXAM: Assigned October 15, Due October 22

October 17: Health problems caused by chemical elements in the environment

Readings: Anthropogenic sources; Effects of endocrine disruptors on human and wildlife health; Mercury in seafood and potential health risks (lecture video)

5. *Case Studies in Environment and Health*

October 22-24: Ecological and Population-level studies

Readings: Monitoring the health and conservation of marine mammals, sea turtles, and their ecosystems; Health risk behaviors and health perceptions in the Peruvian Amazon; Harmonious parasites

October 29-31: Individual-level studies

Readings: River blindness; *Itamae san, sashimi ni mushi, ga imasu!* (Waiter there’s a worm in my *sashimi!*); Regarding Giardia

November 5-7: Studies applying ecosystem and conservation medicine approaches

Readings: Ecosystem approach to rapid health assessments among indigenous cultures in degraded tropical rainforest environments; The mountain gorilla and conservation medicine; Linking human and ecosystem health on the Amazon frontier

November 12 – Veteran’s Day Holiday – No Classes

November 14: Success stories

Readings: Lessons and successes; FENAMAD’s Program in traditional medicine: an integrated approach to health care in the Peruvian Amazon; Cultural contexts of Ebola in northern Uganda; Unseemly behavior

6. *Special Considerations*

November 19-21: Ethical and Ecological Implications

Readings: Indigenous peoples and conservation; Returning benefits from ethnobotanical drug discovery to native communities; Sustainable use of biodiversity: myths, realities, and potential; Evolutionary Tinkering

7. *Poster Presentations*

November 26-28

December 3-5