Course Title: Environmental and Human Health
Instructor: Christopher J. Tennant PhD., CIH., REA
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I. Course Number: HS161
   Unit Value: 3
   Prerequisite: None
   Grading: A, B, C, D, or F

Course Description

The content of this course considers the relationship between chemical, physical, and biological factors in the environment and the health of human populations. Discussion is focused on how we can manipulate or control the environment to prevent human illness and injury. Topics covered include basic concepts in environmental disease, food protection, pests and pesticides, toxic chemicals, noise, radiation, air quality issues, water quality issues, and solid and hazardous waste management. Note: An overview of chemistry principles will be provided, as needed, for students who did not take chemistry for their B1 requirement.

General Education

This course meets General Education requirements for Area IB: Physical Universe and Its Life Forms.

Prerequisites

Completion of General Education Area B requirements.

General Education Goals and Student Learning Outcomes for Area IB

Goal for Area IB: Physical Universe and Its Life Forms
The Integration component of General Education Area IB provides instruction at the upper-division level that integrates material from the lower-division Breadth Area B.

Student Learning Outcomes for Area IB: Physical Universe and Its Life Forms
Students completing courses in Area IB will be able to:
1. Relate facts and principles that form the foundations of living and non-living systems.
2. Distinguish between science and non-science.
3. Apply scientific methodology including the development and testing of hypotheses, to simple investigations in the physical and life sciences.
4. Describe influences of scientific knowledge on the development of the world’s civilizations.
Course-specific Goals and Objectives

The goals of this course are to provide the student with a conceptual understanding of: 1) how humans interact with their environment, 2) how humans are both the cause and the victims of pollution and contamination, and 3) how chemical, physical, and biological hazards are controlled for several key areas of concern in environmental health. Upon successful completion of this course, the student will be able to:

1. Explain how disease is spread among and to humans.
2. Describe the concept of emerging disease, and provide past and present examples of these.
3. Identify chemical, physical, and biological factors in the environment that can negatively influence human health, and describe how these factors can harm humans.
4. Outline appropriate prevention and control methods for several different types of hazards.
5. Analyze ethical dilemmas in environmental health.
6. Evaluate the overall effectiveness of environmental health programs and agencies in addressing and solving community, regional, national, or world-wide problems.
7. Describe the intent of major pieces of environmental health law and policy.
8. Assess the scientific basis and validity of environmental problems presented in the media.
9. Integrate skills learned in lower division Area B coursework through the review of: Several microbial agents that cause disease, microbial growth curves in foodborne illness, arthropods and rodents as vectors of disease, graphing of altitude vs temperature effects of the atmosphere in air pollution, shielding for physical phenomena such as noise and radiation, chemical/physical treatment of drinking water, and geological aspects of drinking water sources.
10. Develop a more informed opinion on proposed environmental health legislation and regulation.
11. Demonstrate an understanding of biogeochemical cycles and the influence human activities place on them.
12. Recognize and apply Garret Hardin's concept of "The Tragedy of the Commons" to environmental pollution issues.
13. Demonstrate an understanding of Kenneth Boulding's concept of "Spaceship Earth" in relations to renewable and nonrenewable resource issues.
14. Recognize the basic principles of toxicology and their utilization and limitation in evaluating adverse effect of substances on living organisms.
15. Recognize the basic principles of epidemiology and their utilization, and limitation, in evaluating human disease in relation to environmental factors.
16. Demonstrate and understanding of environmental regulations pertaining to air pollution and solid waste issues in California.
17. Recognize the principle determinants of occupationally related diseases, there evaluation, and control.
18. Recognize the difference between primary and secondary air pollutants, there source, control, and effects on human health.
19. Identify the principle causes of food borne illness and there prevention.
20. Recognize the difference between primary and secondary water quality standards; major water borne diseases and their control; and water treatment processes.
21. Identify the principle steps in the collection and treatment of liquid wastes and the environmental effects of discharging wastes to the aqueous environment.
22. Recognize the components and sources of solid waste, the disposal options available, and health effects of unregulated solid waste disposal.
23. Recognize the principle rodent and insect vectors of disease, the diseases they cause and their control.
Course Text:


Additional Resources


The Biosphere Scientific America (On Reserve)


Course Topics

The course objectives are met by ten modules and one term paper assignments. The course content modules are:

Module 1: The Scope of Environmental Health
Module 2: Toxicology
Module 3: Epidemiology
Module 4: The Workplace
Module 5: Air in the Home and Community
Module 6: Food
Module 7: Drinking Water
Module 8: Liquid Waste
Module 9: Solid Waste
Module 10: Rodents and Insects

Evaluation Procedures

A. Percent Distribution:
   Term Papers (1) = 200 points
   Tests 10 (@20 points each) = 200 points
   Comprehensive Final Exam = 100 points
   Total: = 500 points

B. Grading Criteria: Students will be graded upon their understanding of the subject matter and background reading with the use of a multiple choice test on each of the ten modules (20 questions each test) and a final exam made up of 10 questions from each of the ten modules (total 100 questions). Students will be graded on their ability to understand and apply concepts in the form of a single term paper assignment. The term paper needs to be completed in approximately 3,000 words and the content referenced to peer reviewed resources. Students will be permitted to submit a draft of the term paper for review and comment before finalizing the manuscript for submission.

C. Grading Scale:

450 - 500 points = A
400 - 449 points = B
350 - 399 points = C
300 - 349 points = D
0 - 299 points = F
Choose ONE of the following titles as your term paper assignment. Your paper should be long enough to adequately answer the question posed but no longer than 5,000 words. (18 pages typed in space and a half). Aim to complete your paper in around 3,000 words.

The paper must be submitted in TYPESCRIPT (not hand written) form. ALL sheets must be stapled together and each sheet should be numbered and have your full name and mailing address. Please keep a copy of your paper in case of loss of the original. All papers should have the enclosed Grading Sheet attached to the front (additional copies are available from outside the instructors office and from the class website). No more than 20% of referenced resources should be from the internet.

A Draft copy of your papers should be handed in for review and comment NO LATER than Friday October 29th 2004 at 4pm. ALL papers received after 4pm on the due day will lose 10 points (a full letter grade) each day thereafter (NO EXCEPTIONS). Papers can be handed in to the Health Science Department office in McLane Hall Room 184 or mailed to:

Christopher J. Tennant PhD., CIH, Department of Health Science, California State University, Fresno, 2345 East San Ramon, Fresno, CA 93740-8031. If you mail a copy of your paper it needs to bear a postmark of October 29th 2004 or before.

Please do not email copies or send via the digital drop box on Blackboard. Only paper versions will be accepted. Draft copies will be returned with comments for improvement for final preparation after about one week. Papers will be available for pick-up from outside my office.

A final copy of your Term Paper must be handed in (as described above) no later than Monday November 22nd 2004 at 4pm. ALL papers received after 4pm on the due day will lose 10 points (a full letter grade) each day thereafter (NO EXCEPTIONS).

The following basic grading system will be used:

A = Excellent, exceeds expected requirements (EXCELLENT)

B = Meets assigned requirements (GOOD)

C = Has not fully answered the question (FAIR/POOR)

D = Falls below requirements for the class

F = Unacceptable for work at the University level.
1. "Rachel Carson's book "Silent Spring" (1962) was merely a piece of sensationalist journalism with little scientific basis". Critically Discuss.
2. How did Alice Hamilton's autobiography "Exploring the Dangerous Trades" (1943) change the public and governments perception of the health hazards associated with the U.S. workplace?
3. What are biogeochemical cycles? Choose one of the biogeochemical cycles identifying the key components and their estimated relative size. How has anthropogenic activity changed the cycle you have chosen and what have been the environmental consequences?

Course and University Policies

Course Policies and Prohibitions: Students are expected to regularly attend class, participate in discussions, and complete all required reading in a timely fashion. Unless otherwise instructed, students are also expected to work independently at all times.

Disruptive Classroom Behavior: Any disruptive or distracting behavior is prohibited, including, but not limited to: Side conversations during lecture, cell phone usage, tape-recording of lecture, bringing visitors or guests to class, use of inappropriate language, or in any way demeaning or disturbing others in the class. (Please refer to the University Policy on Disruptive Classroom Behavior, which can be found in the Schedule of Courses).

Students with Disabilities: Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in Madden Library 1049 (278-2811).

Cheating and Plagiarism: “Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term ‘cheating’ not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating that consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one’s own work.” Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University’s policy regarding cheating and plagiarism, refer to the Schedule of Courses (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

Computers: “At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University’s information resources.”
Subject to Change

This syllabus and the attached schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

Office Hours

Office hours for the Fall 2004 semester are:

    Mondays 9am – 2pm