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SCI 103 – ENVIRONMENTAL SCIENCE (3 credits)

Course Description

An introductory course to environmental problems that include topics related to Atmospheric Pollution, Water Contamination, Human Impacts on Soils with alternatives on sustainable agricultural techniques, as well as solutions and alternatives to Solid and Hazardous Wastes and an overall view on Energy Resources. Extinction of plant and animal species, with a clear focus on preservation of Biodiversity, also is introduced with an interdisciplinary approach that allows students obtain a global view of the present environmental situation. Students will be reinforced with laboratory sessions that will include field trips to the Water Treatment Facility Plant and the Solid Wastes Treatment Plant of the city as well as the use of computer simulators for Global Warming studies and Water Quality Testing of the Manzanares River that runs through the city of Madrid.

Course Format

Lecture course: Audiovisual documentaries and computer simulator programs will serve as an aid to learn diverse environmental problems that affect living organisms on Earth and the natural resources available.

Laboratory course: One session per week that will include a series of field trips to a number of natural sites within the city and countryside of Madrid as well as laboratory experiments that will be conducted in the university's Science Lab.

Course Objectives

Students will be able to understand and analyze basic environmental problems as well as the solutions and alternatives to be taken in order to preserve and conserve the natural resources society is depleting at an unsustainable rate. Practice laboratory and field studies to related sites, will introduce students to different locations, which will help examine related environmental problems, such as waste production, water quality and soil analysis.

Course Evaluation-Grade breakup:

Lecture Course:

Class examinations (Midterm and Final): 65%
Homework assignments, quizzes and research papers: 25%
Class attendance and active participation: 10%

Laboratory Course:

Midterm and Final grades will be based on student participation and graded Lab Reports (no lab exams). All Lab Reports must be handed in one week after the lab has taken place and must be presented as required in the first lab session and following the guidelines given for each lab.

Homework and Participation

Regular attendance is required. Two unjustified absences (for the lecture course) will be allowed. Further **unjustified absences will lower the grade** half a point for each subsequent absence.

The course work will include a series of homework assignments, two research papers (one which will include a presentation) and reading assignments.

Required Text

”Sustaining the Earth: An Integrated Approach” by G. Tyler Miller

Additional Reference Texts

*”Environmental Science” by Enger/Smith (6th Edition)

*"Environmental Biology" by Allan M. Jones 1997
*"Biology: Concepts and Applications" (3rd edition)
C.Starr 1996 Wadsworth Publishing Company

Obigatory Additional Reading Text (for Lab 103):

"Wildlife Wars: My Battle to Save Kenya's Elephants" R. Leakey Ed. Pan Books (2001)

Course Outline

1. Introduction to Environmental Quality
2. Air, Climate and Atmospheric Pollution
3. Global Atmospheric Problematics
 - 3.1. Global Warming
 - 3.2. Ozone Depletion
4. Water Resources and Contamination
5. Soils, Human Impact and Conservation
 - 5.1. Erosion and Desertification
 - 5.2. Habitat Destruction
6. Extinction of Plant and Animal Species
7. Solid and Hazardous Wastes
 - 7.1. Waste Management
 - 7.2. Solutions and Alternatives
8. Energy Resources
 - 8.1. Types of Energy Resources
 - 8.2 A Sustainable Future
9. Human Health and Risk Assessment
- 10.Introduction to Environmental Policies
- 11.Ethical Guidelines for Working with the Planet