

JEFFERSON COLLEGE

COURSE SYLLABUS

BIO109

ECOLOGY AND ENVIRONMENTAL CONSERVATION

3 Credit Hours

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Revised by:
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Minor Revision or Update by: Fran Moore
Per Curriculum Committee Process Change: April 25, 2018

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BIO109 Ecology and Environmental Conservation

I. CATALOG DESCRIPTION

- A. Course prerequisites/co-requisites: Reading proficiency
- B. 3 semester credit hours
- C. Ecology and Environmental Conservation deals with fundamental principles of ecology and how these principles can be applied to the comprehension of environmental problems. Areas of application include populations, land use, air, wildlife, resources and pollution control. Ecology and Environmental Conservation will partially fulfill the natural science requirement for the Associate of Arts degree. (F, S, O)
- D. Curricular Alignment:
- Fulfills part of Natural Sciences (Biological Sciences) CORE requirement for AA, AAT, AFA, select AS, and select AAS degrees; MOTR BIOL 100EC Essentials in Biology equivalent.
 - Elective course applies toward AA or AAT degree.

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Expected Learning Outcomes	Assessment Measures
Identify the basics of scientific methodology as they relate to conservation studies, and distinguish various types of scientific studies	Examination
Comprehend the basics of ecological processes, population dynamics, and fundamental evolutionary mechanisms	Examination
Comprehend components of biological communities, and identify and generalize patterns of biotic interactions	Examination
Analyze and evaluate the validity of conservation science-based literature, and synthesize the information	Written paper, and oral presentation
Compare and contrast historic trends and current knowledge of environmental issues and conservation practices, and synthesize the information	Examination, written paper, and oral presentation
Demonstrate knowledge of major environmental dilemmas, and analyze their origins and potential solutions	Examination, written paper, and oral presentation

III. OUTLINE OF TOPICS

- A. Science overview
 - 1. Complexity and holistic nature of environmental science
 - 2. Scientific methods
 - 3. Physical principles of atoms, energy, and matter
 - 4. Principles of evolution

- B. Ecosystems
 - 1. Ecosystem components, biotic and abiotic
 - 2. Ecosystem complexity and processes
 - 3. Biological communities
 - 4. Species interactions
 - 5. Natural resources and sustainability

- C. Population biology
 - 1. Population concepts and dynamics
 - 2. Population growth regulators
 - 3. Conservation genetics and small population issues
 - 4. Metapopulation concepts and dynamics

- D. Human populations
 - 1. History of human population growth
 - 2. Perspectives on human population growth
 - 3. Factors determining human population growth/decline
 - 4. Global patterns of human population growth/decline and related environmental issues

- E. Biodiversity
 - 1. Threats to biodiversity
 - 2. Benefits of biodiversity and natural resources
 - 3. Species management
 - 4. Habitat and landscape management

- F. Food and agriculture
 - 1. Global resource inequity
 - 2. Soil resources, conservation and management
 - 3. Major global food resources
 - 4. Agricultural sustainability

- G. Air and climate
 - 1. Atmospheric components
 - 2. Climate and weather patterns
 - 3. Pollution, including major pollutants and environmental impacts
 - 4. Global climate change and environmental impact
 - 5. Ozone depletion and environmental impact
 - 6. Acidification and environmental impact

- H. Water resources and management
 - 1. Major water reservoirs
 - 2. Hydrologic cycle
 - 3. Water availability and global use patterns
 - 4. Water conservation and supply increase
- I. Water pollution
 - 1. Major pollutants and environmental impact
 - 2. Water pollution control
 - 3. Water pollution and human health
- J. Environmental and human health
 - 1. Major pollutants, toxins and contaminants
 - 2. Effects of pollutants on the resource base and human health
 - 3. Waste disposal methods
 - 4. Major national and global environmental laws, regulations, and treaties
- K. Energy resources
 - 1. Conventional energy, including types and use
 - 2. Sustainable energy, including types and use
- L. Conservation strategies
 - 1. In-situ conservation concepts
 - 2. Ex-situ conservation concepts
 - 3. Species reintroduction
 - 4. Restoration ecology
 - 5. Holistic conservation
 - 6. Citizen conservation

IV. METHODS OF INSTRUCTION

- A. Lectures
- B. PowerPoint presentations
- C. Videos and video clips
- B. Class discussion
- C. Topic/content outlines

V. REQUIRED TEXTBOOKS

- A. Ryan, J. C.; Durning, A. T. 1997. *Stuff: the secret lives of everyday things*. Northwest Environmental Watch, Seattle, WA.

- B. Text used/required for online course:
Cunningham, W. P., Cunningham, M. A. *Environmental Science: A Global Concern*, (current edition). McGraw-Hill Companies, Inc. NY.

VI. REQUIRED MATERIALS

No required materials

VII. SUPPLEMENTAL REFERENCES

Library resources must be utilized as components of a required current topics assignment

VIII. METHODS OF EVALUATION

- A. Examinations
- B. Current events written paper
- C. Current events oral presentation

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.