JEFFERSON COLLEGE

COURSE SYLLABUS

BIO109

ECOLOGY AND ENVIRONMENTAL CONSERVATION

3 Credit Hours

Prepared by:
Dora Mitchell

Revised by:
Patricia McDaniel
August 2013

Ms. Linda Abernathy, Division Chair, Math, Science & Business
Ms. Shirley Davenport, Dean, Arts & Science Education
BIO109: Ecology and Environmental Conservation

I. CATALOGUE 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)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

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


B. Text used/required for online course:

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/jeffco/index.php?option=com_weblinks&catid=26&Itemid=84)

XI. ATTENDANCE STATEMENT

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.