Introduction to Environmental Biology (BIO-108)

General Course Syllabus
SPRING 2016

Course Title: Introduction to Environmental Biology (BIO-108)

Course Description: This course deals with humans and their interactions with the environment. Topics covered include fundamental aquatic and terrestrial ecology, air and water pollution, world population problems, loss of biodiversity, pesticides, solid waste problems and an extensive review of energy problems and their solutions. Laboratories include measurements of various environmental pollutants, analysis of environmental parameters and descriptive and practical reinforcement of lecture material.

Prerequisites: None

General Education: Yes

Course Credits: 4.0

Hours per week: 6.0: 3 hours lecture and 3 hours lab

Course Coordinator: Charles Sontag


*DO NOT, UNDER ANY CIRCUMSTANCES, PURCHASE USED LABORATORY MANUALS

Student Learning Objectives

The Student will be able to:

1. Scientific Knowledge and Reasoning. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

2. Technological Competency. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
3. Students will be able to describe the process of science and how it is done, identify the properties of matter and identify the basic types of energy. Assessment will be based upon performance on exam questions.

4. Students will be able to identify the components of an ecosystem and how they interact. Assessment will be based upon performance on exam questions.

5. Students will be able to explain how evolution works and how it leads to greater biodiversity. Assessment will be based upon performance on exam questions.

6. Students will be able to identify how climate works and how it effects biodiversity. Assessment will be based upon performance on exam questions.

7. Students will be able to identify the components of an ecological community and population ecology and how it relates to human population growth. Assessment will be based upon performance on exam questions.

8. Students will be able to explain how food is produced on our planet and how pests are controlled. Assessment will be based upon performance on exam questions.

9. Students will be able to identify the components of air and water pollution and how humans are contributing to both. Assessment will be based upon performance on exam questions.

10. Students will be able to identify the basic principles of geology and nonrenewable minerals. Assessment will be based upon performance on exam questions.

11. Students will be able to describe the different ways that humans acquire energy. Assessment will be based upon performance on exam questions.

12. Students will be able to identify the primary factors which contribute to climate change. Assessment will be based upon performance on exam questions.

13. Students will be able to explain what is solid and hazardous waste and how it is removed form the environment. Assessment will be based upon performance on exam questions.

**Laboratory Learning Objectives**

Identify the parts of the microscope and demonstrate proper use. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

1. Explain the basic principles of ecology. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

2. Identify some of the ecological modifications that plants and animals have made to suit their environment. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

3. Identify the basic principles of paleoecology and how we can use this information to make predictions about future climate changes. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

4. Identify and explain the law of tolerance. Assessment will be based on lab quizzes, lab book checks and observation in the lab.
5. Identify and explain the different types of symbiosis. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

6. Identify and explain predator prey relationships. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

7. Identify the basic ecology of the wolf. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

8. Identify and explain ecological sampling in forest and a meadow. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

9. Identify and explain the relationship between dangerous plants and animals and humans. Assessment will be based on lab quizzes, lab book checks and observation in the lab.

**Student Assessment Tools:**

The above student learning objectives will be generally assessed or evaluated by instructors using a variety of assessment instruments including lecture exams, laboratory exams, quizzes, laboratory reports, written reports, presentations, projects, etc. The decisions concerning the type or types and number of instruments that are used in a specific section of the course will be left to the instructor of that section. This information, when given by the instructor should be recorded by the student in the Student Assessment Section of this document.

**Course content**

**Lecture Topics:**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Topics</th>
<th>Readings</th>
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<tr>
<td>1</td>
<td><strong>Fundamental Aquatic and Terrestrial Ecology</strong>&lt;br&gt;A. What is ecology?&lt;br&gt;B. Abiotic components of the environment&lt;br&gt;C. Community structure&lt;br&gt;D. Ecosystems and energy flow through ecosystems&lt;br&gt;E. Ecological succession&lt;br&gt;F. Interactions between species&lt;br&gt;G. Paleoecology</td>
<td>Raven: Chap. 1,2,3,4,5,6</td>
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<td>2</td>
<td><strong>Population Biology</strong>&lt;br&gt;A. Population characteristics&lt;br&gt;B. Growth&lt;br&gt;C. Demography&lt;br&gt;D. Solutions to the problems: Green revolution vs. birth control</td>
<td>Raven: Chap. 14,22</td>
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3 Water and Water Pollution
A. What is water?
B. Types of pollutants
C. Toxic waste
D. Acid deposition
E. Nutrients, organic wastes and BOD
F. Water purification

4 Solid Wastes
A. Types of solid wastes
B. Problems of disposal
C. Recycling
D. Other solutions

5 Air Pollution
A. What is clean air?
B. Gaseous and particulate pollutants
C. Climate change: Global Warming
D. Depletion of the ozone layer
E. Acid deposition
F. Solutions

6 Control of Pests and Weeds
A. Competition between humans and other organisms
B. Types of pesticides
C. Biological magnification
D. Alternatives to long-lived pesticides

7 Loss of Biodiversity – Endangered Plants and Animals
A. Why is biodiversity important?
B. Why organisms become endangered and extinct
C. Effects of lost species
D. Exotic species

8 Energy and Society
A. Our energy supplies and resources
B. How is electricity produced?
C. Short term problems vs. long term
D. Non-renewable resources
E. Renewable resources
F. Future solutions
LABORATORY SCHEDULE

1. Exercise 1. Use of the microscope - the non-science majors approach.
4. Exercise 5. Ecological modifications in plants and animals.
5. Exercise 4. Paleoecology
9. Exercise 17 Environmental Inventory
12. Exercise 7. Ecological sampling – a meadow
14. Exercise 17. Dangerous Plants and Animals I
15. Exercise 18. Dangerous Plants and Animals II and III

Student Assessment:

Unit Examinations. ....................... _____%
Laboratory Tests ......................... _____%
Report/Project ........................... _____%
Class Participation ...................... _____%
Term Paper/research project .......... _____%
Total ...................................... 100%
If you have a medical condition or develop a medical condition during this semester, which prevents you from fulfilling the requirements of this course, you must notify your physician. You and your physician must decide whether or not it is appropriate for you to remain in this course. If the decision is to remain in this course, please obtain a letter from your physician indicating that your continued participation in this course is appropriate and present it to the Department Chair.

Faculty Addenda: As per individual faculty member

Lecture Attendance: As per instructor;

Lab Attendance: As per instructor;

Policy Concerning Late Assignments: As per instructor;

Policy Concerning Make-Up Testing: As per instructor;

Safety Information: As per instructor and assigned exercise;

College Policies:

Student Responsibility
Students will be held responsible for reading all pertinent information in college publications regarding withdrawals, course drops, college deadlines, and tuition refunds. Students are responsible for compliance with the rules and regulations as stated in college publications.

Absence of Instructor
Students are expected to wait twenty minutes for a faculty member to come to class. If at the end of twenty minutes, the faculty member does not come, the students should sign an attendance sheet, which indicates the course, date, and time. A student should deliver the attendance sheet to the divisional office (A304) if between 9:00 a.m. and 5:00 p.m. or to the Evening Office (C107) if before 9:00 a.m. or after 5:00 p.m. Students cannot be penalized by faculty for not waiting longer than twenty minutes.

Academic Dishonesty and Plagiarism
Bergen Community College is committed to academic integrity – the honest, fair and continuing pursuit of knowledge, free from fraud or deception. Students are responsible for their own work. Faculty and academic support services staff will take appropriate measures to discourage academic dishonesty. Plagiarism is a form of academic dishonesty and may be a violation of U.S. Copyright laws. Plagiarism is defined as the act of taking someone else’s words, opinions, or ideas and claiming them as one’s own.

Consequences of Violations Academic Integrity

A. Instructor’s Sanctions for a Violation
The faculty member will determine the course of action to be followed. This may include:
• Assigning a failing grade on the assignment;
• Assigning a lower final course grade;
• Failing the student in the course
• Other penalties appropriate to the violation;
In all cases, the instructor shall notify the Vice President of Student Services of the violation and the penalty imposed. The student has the right to appeal the decision of the instructor to the appropriate department head.

B. Institutional Sanctions for Violations
When a violation of academic integrity has been reported regarding a student, the Vice President of Student Services may impose disciplinary penalties beyond those imposed by the course instructor, which may include suspension or dismissal from the College. The student shall have the right to a hearing before the Vice President of Student Services or a designated judicial affairs committee. Judicial procedures governing violations of academic integrity are contained in the student handbook.

Class Attendance
All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.

Eating and Drinking
Eating or drinking in classrooms, lecture rooms, laboratories, gymnasium, swimming pool, or passageways is forbidden. Covered beverages only are permitted in the library. Eating and drinking are permitted in cafeteria and vending areas only.

Learning Assistance
Henry and Edith Cerullo Learning Assistance Center
The Tutoring Center, English Language Resource Center, Math Walk-In Center and Writing Center are collectively known as the Henry and Edith Cerullo Learning Assistance Center. The Cerullo Learning Assistance Center is located in the Pitkin Education Building, in Room L-125. The telephone number is (201) 447-7489. The Learning Assistance Center, staffed with peer and professional tutors, offers free individual and group tutoring, supplemental instruction, and online tutoring for subjects offered at the College. The Center provides alternative approaches to problem solving and organizational skills. Tutors help clarify classroom lectures and textbooks and help students prepare for exams. These services build student self-confidence and reduce fear of failure. The Center is equipped with the latest technology and software, including tapes, books, review sheets, exercises and software.

Services for Students with Disabilities
Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

Sidney Silverman Library
Main Building, Pitkin Education Center, L-wing, 2nd Floor.
Paramus Library Hours: (201) 447-7131 or visit http://www.bergen.edu/library/calendar/gcal.htm
Paramus Service Desk: (201) 447-7970
Meadowlands Location: 1280 Wall Street, Lyndhurst 2nd Floor
Meadowlands Library Hours: http://www.bergen.edu/library/calendar/gcal.htm
Meadowlands Service Desk: (201) 301-9692
www.bergen.edu/library

Testing Services
The Bergen Community College Office of Testing Services (OTS) is located in Room S-127. OTS serves the college community by identifying, developing, procuring, administering, processing, and/or evaluating examinations, which meet a variety of administrative and instructional needs. To contact the OTS, please call (201) 447-7202. The Office of Testing Services administers makeup tests as a service for students who, for compelling and exceptional reasons, have missed a scheduled classroom examination. Students must receive prior permission from and make arrangements with their course instructors to take these examinations, under specific conditions, in the Office of Testing Services, Room S-127.
WebAdvisor
WebAdvisor is a web interface that allows students to access information contained in Datatel’s Colleague, the administrative database used by Bergen Community College. Students may use WebAdvisor to register for classes, to pay tuition and fees, to view their class schedules, to check grades, to check on progress toward degree requirements, etc. WebAdvisor accounts are available for all students enrolled in credit programs. New students are strongly encouraged to attend an in-person registration or advisement session before using a WebAdvisor account. Eligible students without WebAdvisor user names and passwords may access their WebAdvisor account by going to go.bergen.edu and selecting “I’m new to WebAdvisor.” Then, follow the on-screen directions. Check the WebAdvisor FAQ for answers to common questions, such as how to reset your password. Students must have a valid e-mail address on file with the College to use WebAdvisor