BIO-106L: ENVIRONMENT, ECOLOGY, & EVOLUTION LABORATORY

Cuyahoga Community College

Viewing:BIO-106L : Environment, Ecology, & Evolution Laboratory

Board of Trustees:
2008-05-22

Academic Term:
2200-08-23

Subject Code
BIO - Biology

Course Number:
106L

Title:
Environment, Ecology, & Evolution Laboratory

Catalog Description:
Designed for non-science majors. Questions about the natural world are explored through hands-on laboratory and field activities focusing on evolution, ecology, and environmental science. Scientific inquiry is used to investigate how populations change over time; the diversity of life; community ecology; ecosystem ecology; and human impacts on the environment.

Credit Hour(s):
1

Lecture Hour(s):
0

Lab Hour(s):
3

Other Hour(s):
0

Requisites

Prerequisite and Corequisite
ENG-0990 Language Fundamentals II or appropriate score on English Placement Test. Concurrent enrollment in BIO-1060 Environment, Ecology, and Evolution is strongly recommended.

I. ACADEMIC CREDIT

Academic Credit According to the Ohio Department of Higher Education, one (1) semester hour of college credit will be awarded for each lecture hour. Students will be expected to work on out-of-class assignments on a regular basis which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity. For laboratory hours, one (1) credit shall be awarded for a minimum of three laboratory hours in a standard week for which little or no out-of-class study is required since three hours will be in the lab (i.e. Laboratory 03 hours). Whereas, one (1) credit shall be awarded for a minimum of two laboratory hours in a standard week, if supplemented by out-of-class assignments which would normally average one hour of out-of-class study preparing for or following up the laboratory experience (i.e. Laboratory 02 hours). Credit is also awarded for other hours such as directed practice, practicum, cooperative work experience, and field experience. The number of hours required to receive credit is listed under Other Hours on the syllabus. The number of credit hours for lecture, lab and other hours are listed at the beginning of the syllabus. Make sure you can prioritize your time accordingly. Proper planning, prioritization and dedication will enhance your success in this course.

The standard expectation for an online course is that you will spend 3 hours per week for each credit hour.
II. ACCESSIBILITY STATEMENT

If you need any special course adaptations or accommodations because of a documented disability, please notify your instructor within a reasonable length of time, preferably the first week of the term with formal notice of that need (i.e. an official letter from the Student Accessibility Services (SAS) office). Accommodations will not be made retroactively.

For specific information pertaining to ADA accommodation, please contact your campus SAS office or visit online athttp://www.tri-c.edu/accessprograms/. Blackboard accessibility information is available athttp://access.blackboard.com.

Eastern (216) 987-2052 - Voice
Metropolitan (216) 987-4344 – Voice. (216) 987-4048 – TTY.
Western (216) 987-5079 – Voice. (216) 987-5117 – TTY.
Westshore (216) 987-3900 – Voice. (216) 987-4048 – TTY.
Brunswick (216) 987-5079 – Voice. (216) 987-5117 – TTY.
Off-Site (216) 987-5079 - Voice

III. ATTENDANCE TRACKING

Regular class attendance is expected. Tri-C is required by law to verify the enrollment of students who participate in federal Title IV student aid programs and/or who receive educational benefits through other funding sources. Eligibility for federal student financial aid is based in part on enrollment status.

Students who do not attend classes for the entire term are required to withdraw from the course(s). Additionally, students who withdraw from a course or stop attending class without officially withdrawing may be required to return all or a portion of their financial aid based on the date of last attendance. Students who do not attend the full session are responsible for withdrawing from the course(s).

Tri-C is responsible for identifying students who have not attended a course before financial aid funds can be applied to students' accounts.

Therefore, attendance is recorded in the following ways:

• For in-person and blended-learning courses, students are required to attend the course by the 15th day of the semester (or equivalent for terms shorter than five weeks) to be considered attending. Students who have not met all attendance requirements for in-person and blended courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

• For online courses, students are required to login at least two times per week and submit one assignment per week for the first two weeks of the semester, or equivalent to the 15th day of the term. Students who have not met all attendance requirements for online courses, as described herein, within the first two weeks or equivalent, will be considered not attending.

At the conclusion of the first two weeks of a semester or equivalent, instructors report any registered students who have “Never Attended” a course. Those students will be administratively withdrawn from that course. However, after the time period in the previous paragraphs, if a student stops attending a class or wants or needs to withdraw, for any reason, it is the student's responsibility to take action to withdraw from the course. Students must complete and submit the appropriate Tri-C form by the established withdrawal deadline.

If illness or emergency should necessitate a brief absence from class, students should confer with instructors upon their return. Students having problems with coursework due to a prolonged absence should confer with the instructor or a counselor.

IV. LEARNING OUTCOMES ASSESSMENT

Occasionally, in addition to submitting assignments to their instructors for evaluation and a grade, students will also be asked to submit completed assignments, called ‘artifacts,’ for assessment of course and program outcomes and the College’s Essential Learning Outcomes (ELOs). The artifacts will be submitted in Blackboard or a similar technology. The level of mastery of the outcome demonstrated by the artifact DOES NOT affect the student’s grade or academic record in any way. However, some instructors require that students submit their artifact before receiving their final grade. Some artifacts will be randomly selected for assessment, which will help determine improvements and support needed to further student success. If you have any questions, please feel free to speak with your instructor or contact the Learning Outcomes Assessment office.

V. CONCEALED CARRY STATEMENT

College policy prohibits the possession of weapons on college property by students, faculty and staff, unless specifically approved in advance as a job-related requirement (i.e., Tri-C campus police officers) or, in accordance with Ohio law, secured in a parked vehicle in a designated parking area only by an individual in possession of a valid conceal carry permit.

As a Tri-C student, your behavior on campus must comply with the student code of conduct which is available on page 29 within the Tri-C student handbook, available athttp://www.tri-c.edu/student-resources/documents/studenthandbook.pdfYou must also comply with the College's Zero Tolerance for Violence on College Property available athttp://www.tri-c.edu/policies-and-procedures/documents/3354-1-20-10-zero-tolerance-for-violence-policy.pdf
Outcomes

Course Outcome(s):
Apply the process of scientific inquiry to explore questions about the natural world.

Objective(s):
1. Distinguish among an observation, hypothesis, experiment, conclusion and theory.
2. Use scientific inquiry to write a hypothesis, design and perform an experiment to test predictions of the hypothesis, collect and analyze data, and draw inferences from the results.
3. Demonstrate appropriate use of scientific equipment, including a microscope, balances, volumetric glassware, etc.
4. Distinguish between observations and inferences.

Course Outcome(s):
Analyze how populations change genetically over time through the process of evolution resulting in the unity and diversity of life.

Objective(s):
1. Identify and distinguish among the domains, kingdoms, and major phyla of life.
2. Describe and apply the effects of environmental changes on a sample population.

Course Outcome(s):
Analyze the relationships and interactions between living things and their environment.

Objective(s):
1. Map the paths of major chemical elements in biogeochemical cycles.
2. Analyze and explain a population growth curve.
3. Identify different types of community interactions.
4. Construct a food chain and analyze the flow of energy through trophic levels.

Course Outcome(s):
Evaluate causes, explain effects, and propose solutions regarding human impact on the environment in order to make informed environmental decisions in daily life.

Objective(s):
1. Demonstrate the effects of human activities on selected aquatic and/or terrestrial ecosystems.
2. Identify local, regional and global environmental concerns.
3. List current approaches to conservation and sustainability of our earth and its natural resources.
4. Analyze a personal water and/or carbon footprint.

Methods of Evaluation:
1. In-class experiments
2. Lab practicals
3. Lab reports/assignments
4. Review analyses
5. Individual or group presentations
6. Quizzes
7. Posters

Course Content Outline:
1. Science as a process
   a. Observations
   b. Hypotheses
   c. Experimental design, including data, variables, and controls
   d. Conclusions
   e. Scientific use of the word “theory”
   f. Microscopy
   g. Measurements
   h. Graphing
2. Population genetics
3. Evolutionary processes
   a. Natural selection
   b. Mutation
   c. Genetic drift
   d. Gene flow
   e. Nonrandom mating
   f. Adaption
4. Evidence for evolution
   a. Fossil record
   b. Comparative anatomy
   c. Molecular biology
   d. Biogeography
5. Classification of Life
   a. Dichotomous keys
6. Population ecology
   a. Distribution
   b. Growth
   c. Survivorship
   d. Demography
7. Community ecology
   a. Food webs
   b. Predator-prey interaction
   c. Competition
   d. Symbiosis
   e. Succession
8. Ecosystem ecology
   a. Terrestrial biomes
   b. Aquatic ecosystems
   c. Biogeochemical cycles
   d. Energy flow
9. Human population growth
10. Effects of pollution
11. Human impacts on ecosystems
12. Local/regional environmental concerns
13. Terrestrial biomes/aquatic ecosystems
14. Taxonomy
   a. Domains
   b. Kingdoms
   c. Major Animal Phyla and Plant Divisions
   d. Major Arthropod Classes
   e. Major Vertebrate Classes
15. Tools and skills of biology
   a. Use a microscope
   b. Take measurements using the metric system
   c. Formulate hypotheses
   d. Design a controlled experiment
   e. Graph data
   f. Construct a dichotomous key
   g. Assign organisms to appropriate taxa
   h. Draw and interpret a growth curve.
   i. Estimate population size
   j. Mark and recapture study
   k. Quadrat analysis
   l. Graph population data
   m. Use various environmental sampling techniques to collect data.
16. Science versus non-science
a. Science as a process  
b. Evolution as a scientific theory  
c. Changing classification categories  
d. Interconnectedness  
e. Populations change over time  
f. Sustainability  
g. Tragedy of the commons  
h. Sustainability  
i. Stewardship  
j. Biodiversity  
k. Conservation  
l. Renewable and non-renewable resources

Resources


Resources Other

Instructional Services
OAN Number: 
TMNS
Top of page
Key: 905