

NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE

COURSE SYLLABUS

Course Title: GENERAL ECOLOGY

Course #: BIO* 270

Course Description: 4 semester hours (3 class hours/3 laboratory hours).

Lecture: An appreciation for ecological principles is developed through lecture and laboratory exercises. Energy flow and biogeochemical cycling are discussed, and population and community dynamics are explored in the field and in the lecture. Other topics include the ecosystems and the physical constraints on life, biodiversity, genetics and genetic drift, speciation, community energetics, conservation biology, and local/global ecological issues. Emphasis is on reading primary literature, problem-solving, and exposure to ecological research techniques. Computer skills, including email, word processing, and web navigation **are critical** for this course. Field trips are required.

Lab: Lab section to accompany BIO* 270 lecture to introduce students to a field and laboratory study of ecology. Using common ecological methods, laboratory exercises will be conducted in the field that accompany the topics covered in lecture. Applied statistics will be utilized by students to analyze the class data. Topics that may be covered will include: physical constraints, population dynamics, competition, species interactions, habitat classification, community structure analysis, animal behavior, and conservation biology.

Pre-requisite/Co-requisite: Completion of the following with a "C" or better: BIO* 121, ENG* 101, and MAT* 167.

Goals (Lecture): To provide the student with a comprehensive understanding of ecological principles: the constant change of the Earth over geologic time, concepts of adaptation, natural selection, and evolution, definitions of species and speciation, interactions of living organisms and the physical environment, inter- and intraspecific relationships, changes in ecological communities over time. In addition, students will be exposed to concepts of ecology as they relate to current major environmental problems.

Goals (Lab): To provide students with projects and activities to reinforce comprehensive ecological principles including: population and community dynamics, abiotic and biotic interactions, and nutrient cycling; to develop proficiency with modern sampling tools and techniques; to identify the major biomes, as well as the micro- and macroecosystems of Connecticut. The general objectives of BIO 178L are to: (1) Utilize basic ecological sampling techniques via hands-on examples and field projects and (2) Apply the principles and concepts of ecology to data collected from the field. Guidance in statistical interpretation will be provided.

Outcomes (Lecture): At the end of the course, students should be able to:

1. Define and discuss the scientific method
2. Define ecology, ecosystem, community, and population
3. Compare and contrast ecology to the other biological, chemical, and physical sciences
4. Explain the relationships among adaptation, natural selection, and evolution
5. Examine the sources of genetic variation within a population
6. Analyze how abiotic components of an ecosystem affect biotic components
7. Compare and contrast animal and plant adaptations to the environment
8. Define decomposition and discuss the variety of processes involved
9. Summarize the types of population distribution
10. Explain the factors of population growth and examine the various reasons why populations go extinct
11. Compare and contrast various forces of intraspecific population regulation

12. Distinguish between the payouts, tradeoffs, and consequences of both sexual and asexual reproduction
13. Analyze the various types of species interactions that occur within communities
14. Explain succession
15. Compare and contrast various forces of interspecific competition
16. Define predation and distinguish among its forms
17. Describe the various types of parasitism
18. Compare and contrast the various processes that shape communities
19. Discuss the concept and application of sustainable yield to the exploitation of natural populations
20. Describe the concept of the ecosystem including thermodynamics and productivity
21. Identify the major biogeochemical cycles and describe sources and sinks of each
22. Compare and contrast the major biomes of New England and the Earth as a whole
23. Identify, analyze, and discuss the major causes of global environmental change and their impacts on life

Outcomes (Lab): At the end of this laboratory course component, the student will be able to:

1. Explain the importance of field, laboratory, and microcosm experimentation in ecology
2. Describe the importance and history of interpretive natural history in ecology
3. Use modern techniques of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) to assist in data collection and analysis.
4. Properly carry out soil sampling and analysis
5. Properly carry out air sampling and analysis
6. Properly carry out weather sampling and analysis
7. Properly carry out water quality sampling and analysis
8. Properly carry out dissolved gas and nutrients sampling and analysis
9. Properly carry out population and community structure sampling and analysis, both quantitatively and qualitatively.
10. Compute appropriate comprehensive statistical analyses of data sets from the field
11. Identify experimental error and suggest solutions
12. Interpret and draw appropriate conclusions from the analysis of data sets from the field

College Policies

Plagiarism: Plagiarism and Academic Dishonesty are not tolerated at Northwestern Connecticut Community College. Violators of this policy will be subject to sanctions ranging from failure of the assignment (receiving a zero), failing the course, being removed/expelled from the program and/or the College. Please refer to your "Student Handbook" under "Policy on Student Rights," the Section entitled "Student Discipline," or the College catalog for additional information.

Americans with Disabilities Act (ADA): The College will make reasonable accommodations for persons with documented learning, physical, or psychiatric disabilities. Students should notify Dr. Christine Woodcock, the Counselor for Students with Disabilities. She is located at Green Woods Hall, in the Center for Student Development. Her phone number is 860-738-6318 and her email is cwoodcock@nwcc.edu.

School Cancellations: If snowy or icy driving conditions cause the postponement or cancellation of classes, announcements will be made on local radio and television stations and posted on the College's website at www.nwcc.edu. Students may also call the College directly at **(860) 738-6464** to hear a recorded message concerning any inclement weather closings.

Students are urged to exercise their own judgment if road conditions in their localities are hazardous.

Use of Electronic Devices: Some course content as presented in Blackboard Learn is not fully supported on mobile devices at this time. While mobile devices provide convenient access to check in and read information about your courses, they should not be used to perform work such as taking tests, quizzes, completing assignments, or submitting substantive discussion posts.

Sexual Assault and Intimate Partner Violence Resource Team: NCCC is committed to creating a community that is safe and supportive of people of all gender and sexual identities. This pertains to the entire campus community, whether on ground or virtual, students, faculty, or staff.

Sexual assault and intimate partner violence is an affront to our national conscience, and one we cannot ignore. It is our hope that no one within our campus community will become a victim of these crimes. However, if it occurs, NCCC has created the SART Team - Sexual Assault and Intimate Partner Violence Resource Team - to meet the victim's needs.

SART is a campus and community based team that is fully trained to provide trauma-informed compassionate service and referrals for comprehensive care. The team works in partnership with The Susan B. Anthony Project to extend services 24 hours a day, 7 days a week throughout the year.

The NCCC team members are:

Ruth Gonzalez, Ph.D.	860-738-6315	Green Woods Hall Room 207
Susan Berg	860-738-6342	Green Woods Hall Room 223
Kathleen Chapman	860-738-6344	Green Woods Hall Room 110
Michael Emanuel	860-738-6389	Founders Hall Annex Room 308
Seth Kershner	860-738-6481	Library
Jane O'Grady	860-738-6393	Founders Hall Annex Room 212
Robin Orloski	860-738-6416	Business Office Room 201
Patricia Bouffard, Ex-Officio	860-738-6319	Founders Hall Room 103
Savannah Schmitt		Student Representative

At NCCC we care about our students, staff and faculty and their well-being. It is our intention to facilitate the resources needed to help achieve both physical and emotional health.