

NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE

COURSE SYLLABUS

Course Title: GENERAL ECOLOGY **Course #:** BIO* 178

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

Lecture: An introduction to the basic principles of ecology and application of these principles to conservation and environmental problems. Computer skills, including email, word processing, and web navigation **are critical** for this course. . Field trips are required.

Lab: Lab section to accompany BIO* 178 lecture to introduce students to a field and laboratory study of ecology. Ecology is the study of interactions among organisms, and between organisms and their physical environment. We will investigate basic ecological theories through laboratory exercises conducted both in class and in the field. Topics that may be covered could include: population growth, competition, species interaction, habitat description, animal behavior and community analysis. Part of the laboratory exercises will focus on environmental issues and the measurement of environmental data.

Pre-requisite/Co-requisite: Eligibility for, or completion of, ENG* 101.

Goals (Lecture): To provide the student with a basic understanding of ecological principles including: 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 and will gain exposure to organizations working on mediating those issues.

Goals (Lab): To provide students with projects and activities to reinforce basic 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 171L are to: (1) Utilize basic ecological sampling techniques via hands-on examples and field projects (2) Apply the principles and concepts of ecology to data collected from the field and (3) Work with local organizations to collect data that will inform ecological decision making in the northwest corner of Connecticut and beyond.

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, discuss the variety of processes involved, and relate the process to soil ecology
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. Describe succession and community structure
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 living organisms

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 GIS and GPS to assist in data collection and analysis.
4. Properly carry out soil, air, water quality, dissolved gas/nutrients, and weather sampling and analysis.
5. Properly carry out population and community structure sampling and analysis, both quantitatively and qualitatively.
6. Properly carry out an ethology observational study.
7. Compute simple statistical analyses of data sets from the field
8. Identify experimental error and suggest solutions
9. 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.
- **Mobile 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.
 - 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.
 - 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 Annex Room 308
Gary Greco	860-738-6397 (V) 860-469-3138 (VP)	Founders Hall Room 101
Robin Orloski	860-738-6416	Business Office Room 201
Jane O’Grady	860-738-6393	Founders Hall Annex Room 212
Patricia Bouffard, Ex-Officio	860-738-6319	Founders Hall Room 103
Savannah Schmitt		Student Representative

**COURSE OVERVIEW:
FALL 2016**

Course Title: GENERAL ECOLOGY

Number & Section: BIO* 178 **CRN#** 3065/3116

Course Type: Lecture/Lab (BB supported)

Instructor: PROFESSOR TARA JO HOLMBERG

Phone: 860-738-6363 **Office number:** ASB 206

E-Mail: tholmberg@nwcc.edu **Office hours (or by appt):** W 1:30–2:00; TR 3:15-4:15; R 6:30 – 7:00 (GW 301)

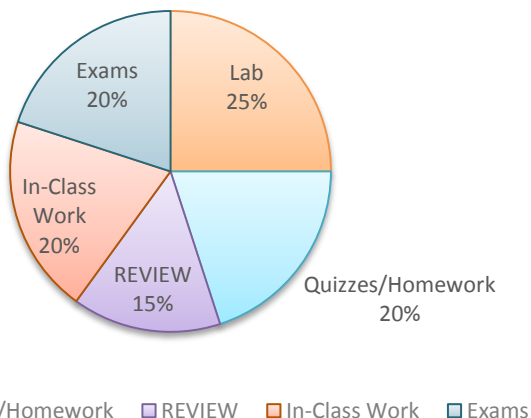
Text/Course Materials: Provided online + Prezis

Course Progression: (subject to change at Instructor's Discretion).

There will be routine quizzes that will be completed online through BB. There will also be routine lab reports/writeups. Assignments and Due Dates will be posted in the Calendar in BlackBoard.

WEEK	READINGS	LAB
1	INTRO TO ECOLOGY; EVOLUTION AND LIFE ON EARTH; PRACTICING ECOLOGY	INTRO; SAFETY; EQUIPMENT; ORGANISM ID; WATER SAMPLING; PLANT COMPETITION; INVASIVE PLANT PULL
2	NO CLASSES SEPTEMBER 5TH – LABOR DAY ORGANISMS IN OUR ENVIRONMENT	NO LAB – LABOR DAY
3	BIOMES AND CLIMATE CHANGE;	LIMNOLOGY: STILL RIVER (WINSTED); INVASIVE PLANT PULL
4	ADAPTATION AND EVOLUTION	LIMNOLOGY: FARMINGTON RIVER (BARKHAMSTED)
5	SPECIES OVER GEOLOGIC TIME; PHYLOGENY	LIMNOLOGY: NAUGATUCK RIVER (TORRINGTON)
6	NATURAL SELECTION	PHENOLOGY PROJECT (I) AND TCA: RIVER DELL ACRES (WINSTED)
7	SPECIES/SPECIATION; POPULATIONS NO CLASS OCT 12TH – ONLINE MATERIAL	TCA: BURR POND STATE PARK (TORRINGTON)
8	INHERITANCE AND MUTATIONS	TCA: JOHN MINETTO STATE PARK (GOSHEN)
9	LIFE HISTORIES; BEHAVIOR/FITNESS	TCA: DATA ANALYSIS (ASB 214); PLANT COMPETITION (ASB 116)
10	BEHAVIOR/FITNESS; HUMAN POPULATIONS NO CLASS NOV 2ND – ONLINE MATERIAL	LIVINGSTON RIPLEY WATERFOWL CONSERVANCY (LITCHFIELD)
11	SPECIES INTERACTIONS	ROARING BROOK NATURE CENTER (CANTON)
12	SPECIES INTERACTIONS ; SUCCESSION; COMMUNITY DIVERSITY	PHENOLOGY PROJECT (II): RIVER DELL ACRES FARM (WINSTED) / ELEPHANT ECOLOGY (ASB 116)
13	BIOGEOGRAPHY; ENERGY AND MATTER NO CLASS NOV 23RD – THANKSGIVING	FOOD WEBS/CLIMATE CHANGE (ASB 116)
14	BIODIVERSITY; CONSERVATION BIOLOGY	REVIEW PRESENTATIONS (ASB 116)
15	CONSERVATION OF SPECIES AND HABITAT; ECOLOGICAL RESTORATION	REVIEW PRESENTATIONS (ASB 116)
16	FINAL EXAM	NO LAB – FINALS WEEK

Grading Percentages



GRADING POLICY (LECTURE) [¥] [□] [£]

Lab Assignments and Participation ^{#∞}	25%
Quizzes and homework ^{*§∞}	20%
REVIEW Writings and Presentations [∞]	15%
In Class Assignments/Participation ^{#∞}	20%
Exams (Midterm 7.5% and Final 7.5%) ^{€∞}	20%
Total	100%

GRADING POLICY (LAB) [¥] [□] [£]

Attendance/ Participation [#]	20%
Lab Reports/Writeups/Assignments ^Ω	80%
Total	100%

¥ Letter grades will follow NCCC's standard breakdown as found in the course catalog.

□ Incompletes will ONLY be assigned when at least 90% of the course work has already been completed.

£ Withdrawals must be submitted to the Registrar's office on or before the withdrawal date for the semester. Requests for withdrawal after the cutoff date WILL NOT be approved. Please consult the College's calendar for important dates.

* Lowest quiz will be dropped. Any quiz not taken will be assigned a zero and will count as the lowest quiz grade.

§ Missed quizzes **may not** be made up.

€ If you will miss an exam, you must notify me **via email in BB/LEARN BEFORE** the exam. Exams missed without prior notification will be assigned a zero. Make-up midterms will be administered the *final* week of classes. It is the student's individual responsibility to make arrangements with the instructor to make up missed midterms for which the student had given prior written notification. Missed midterms not made up prior to the final exam will be assigned a zero.

The participation grade includes participating in class/in the field, working well with other students in lab, following all directions by the instructor, abiding by the Code of Conduct for the class as well as all safety procedures, and other aspects of behavior and attitude deemed important by the instructor.

∞ Dates for assignments can be found in the course Calendar

Ω The lab assignments are as follows (1400 points total):

- ID Quizzes (50 pts)
- Food Web Lab (100 pts)
- Plant Competition (150 pts)
- HHMI Elephant Ecology Lab (100 pts)
- Limnology Project/Report (300 pts)
- Livingston Ripley Waterfowl Conservancy Responses (100 pts)
- Terrestrial Community Analysis Project/Report (300 pts.)
- RBNC Responses (100 pts)
- Phenology Project (300 pts)
- HHMI WildCam Project (100 pts)
- Climate Change Lab (100 pts)

CITIZEN SCIENCE AND SERVICE LEARNING

In lab and lecture, you will be involved in projects that gather data for your own edification but also for the knowledge and long-term databases of NCCC's organizational partners, including the Farmington River Watershed Association, Northwest Conservation District, CT Department of Energy and Environmental Protection, Livingston Ripley Waterfowl Conservancy, Project BudBurst, and the Howard Hughes Medical Institute's WildCam Gorongosa Project.

We will discuss each of these organizations and projects individually but know that the quality of *your* data is important. We will spend time discussing what this means, and you will reflect on your experiences, but in order for us to make the best use of our time and for you to make a contribution, all of the information you collect will be shared with our partners to help them better understand and make informed decisions about the ecology of the part of the planet they are responsible for.

ATTENDANCE AND LAB

Regular attendance in lecture and lab is encouraged and expected in order for students to be successful in this course. Students are expected to be present during exams and to take the quizzes online by the due date. Students are expected to be present at all regularly scheduled lectures to be successful in the course. Any information assigned/lectured on in class or assigned readings are fair game for assessment.

Attendance in the laboratory section is mandatory. Laboratory counts as 30% of your overall course grade and attendance/participation is a sizable portion of the laboratory grade. If you miss a class, it is *your* responsibility to obtain class handouts from the instructor and notes from other students. Laboratory content will be addressed in the first lab. **Missed labs cannot be made up!**

I do not assign/give extra credit. Please do not ask.

Most labs will involve field trips to local areas. Participation in the field trips is mandatory for successful completion of any ecology course. Carpooling to field sites can be arranged for those who do not have their own transportation. See the Field Safety guide for further specifications. Always bring all handouts, a notebook, and a pencil to record field observations and data. All areas, whether state or federal, will be respected while we are on site. I follow the "leave no footprint behind" school of thought when it comes to fieldwork, and for the purposes of this class, so will you. All lab handouts and directions to field sites can be found on BB – it is your responsibility to access this on a daily basis to look for changes or information related to our lab schedule.

BLACKBOARD (BB), QUIZZES, EXAMS, MAKEUP POLICIES, AND ASSIGNMENTS

Short quizzes will be conducted at the beginning of each class to make sure you are keeping up with the readings and other online material (including Prezis). Longer, periodic quizzes are conducted online to conserve class time for lecture and to ensure consistent studying of material. Students are expected to access quizzes during the open period; the open period lasts three days during which a student may take the quiz at any time. Quizzes **cannot** be made up once the deadline has passed. **There will be no make-up quizzes.** The lowest quiz grade will be dropped. A missed quiz becomes the dropped quiz grade. Each additional missed quiz will be assigned a zero. In order to take the quizzes, you must be able to log into BB which is the same login to register online, retrieve grades, etc. As you will have multiple days to complete each quiz, and there are many computers with reliable internet available to you, "computer problem" excuses will not be accepted for missing a quiz or for a late or missed assignment. Saying your internet or computer "broke" is not a valid reason to miss a quiz or assignment. Take the quiz early in the open period to avoid running out of days.

There are two exams in the course – the midterm and the final. The midterm exam may be made up only be made up if there is a *reasonable and valid reason*. You **MUST** notify the instructor **before** the midterm exam if you are going to be absent. Exams will be made up at the end of the semester before the final. It is the **student's** responsibility to make arrangements for a midterm makeup exam which will take place on the following dates: December 7th at 1:15 p.m. **YOU MUST LET THE INSTRUCTOR IF YOU WILL BE ATTENDING.** Only one make-up exam is allowed per student. Make-up exams will be made up **entirely** of essay questions. These questions **will not** be distributed in advance. The date of the final exam will be announced during the last few weeks of the course.

All technical issues should be remedied in the first week of class - there will be a practice quiz you can take to ensure that all problems have been resolved. If you do not have a home computer, there are computer labs throughout campus and at your own local library.

All readings will be posted online and it is the responsibility of the student to gain access to those readings. For handouts, one handout per student will be provided by the instructor and will also be posted on BB LEARN. If lost, students must print out their own copy of the handout either at home, the learning center, or the computer center.

We will go over the content within the BB site the first day of class but it will be the **student's responsibility** to periodically log in and check for updates, announcements, changes in the calendar, etc. from the first day until the last day of class. Some of you may not "like" computers but students should get used to using them in order to be successful in their career in the future. Learning the different roles of technology is part of NCCC's general education outcomes. Students will be required to review short pieces of scientific literature/multimedia for discussion in class or for assignments and these will be located on BB.

All assignments will be turned in on BB, unless otherwise stated. Due dates are clearly marked in the Calendar on BB. **Late assignments will be reduced in 10% per day. When an assignment is beyond a week late, it will no longer be accepted for credit.**

I have found that if you truly understand the material then you should be able to teach it. A portion of your grade in the lecture portion of this class will come from several short REVIEWS on ecological studies in the news, as well as your reflections on this material for your fellow classmates. You will be required to comment on at least two of your peers' entries per assignment. You will also be presenting on one of your REVIEWS in class to educate your peers at the end of the semester. Details will be given a few weeks into the class.

Reminder: Late assignments will be reduced in credit by 10% per day. When an assignment is beyond a week late, it will no longer be accepted for credit. You should use a computer with a reliable internet connection and current technology for submitting assignments and quizzes. Quizzes cannot be made up.