

**NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE
COURSE SYLLABUS**

Course Title: GENERAL BIOLOGY II with Lab

Course #: BIO 122

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

This lab science course focuses on the biology of organisms including plant and animal structure and function, nutrition, life cycles, and ecological relationships; and the origin and evolution of life. Computer skills, including email, word processing, and web navigation **are critical** for this course. Field trips are required.

Pre-requisite/Co-requisite: Eligibility for, or completion of, ENG* 101. BIO* 121 is recommended by not required.

Goals: To provide the student with a basic understanding of biological principles including: the history of life on Earth over geologic time, concepts of adaptation, natural selection, and evolution, characteristics of all 6 recognized kingdoms of life, interactions between living organisms and between them and the physical environment, systems of plants and animals, and recognition of the major ecosystems of the world. In addition, students will be exposed to concepts of biology as they relate to current science events and issues.

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

1. Define and discuss the scientific method
2. State the theoretical basis for modern classification systems
3. Describe the criteria used to assign species to each kingdom
4. Write scientific names using the binomial classification system
5. Discuss the difference between a virus and a cell.
6. Describe the mechanisms of viral infection
7. Describe the distinguishing characteristics of Prokaryotic cells
8. Explain how drug and antibiotic resistance occurs in bacteria
9. Summarize the ecological significance of bacteria
10. List the distinguishing characteristics of Protozoans and Algae
11. Describe the adaptive advantages that algae possess
12. Trace the evolutionary advances of land plants in each of the following:
 13. Non vascular Plants, Seedless Vascular plants, Gymnosperms and Angiosperms
14. Explain what alternation of generations is
15. Describe the evolutionary advances seen in each of the major animal phyla
16. Distinguish between acoelomate, pseudocoelomate and coelomate animals
17. Name the three germ layers and their fates during embryonic development
18. Understand the planes of body symmetry
19. Distinguish between protostome and deuterostome development
20. List the distinguishing characteristics and evolutionary developments of annelids, molluscs, arthropods, echinoderms and chordates
21. Describe the distinguishing characteristics and evolutionary advances of the following vertebrate groups: jawless fish, chondrichthyes, amphibians, reptiles, turtles, birds and mammals. u. List the adaptations that made it possible for vertebrates to live on land
22. Describe the structure and functions of the organs involved in each of the following human systems: Digestive, Circulatory, Respiratory, and Nervous as well as the Muscle and Skeletal System
23. Compare the functions of these systems with those found in lower vertebrates and invertebrates.
24. Describe the characteristics of the major biomes found on earth
25. Outline the flow of energy through an ecosystem

Competencies:

Scientific Reasoning: Upon successful completion of the course student will be able to:

1. Explain the methods of scientific inquiry that lead to the acquisition of knowledge. Such methods include observations, testable hypotheses, logical inferences, experimental design, data acquisition, interpretation, and reproducible outcomes.

2. Apply scientific methods to investigate real-world phenomena, and routine and novel problems. This includes data acquisition and evaluation, and prediction.
3. Represent scientific data symbolically, graphically, numerically, and verbally.
4. Interpret scientific information and draw logical references from representations such as formulas, equations, graphs, tables, and schematics.
5. Evaluate the results obtained from scientific methods for accuracy and/or reasonableness.

Scientific Knowledge and Understanding: Upon successful completion of the course student will be able to:

1. Communicate using appropriate scientific terminology.
2. Use representations and models to communicate scientific knowledge and solve scientific problems.
3. Plan and implement data collection strategies appropriate to a particular scientific question.
4. Articulate the reasons that scientific explanations and theories are refined or replaced.
5. Evaluate the quality of scientific information on the basis of its source and the methods used to generate it.