

**NORTHEASTERN TECHNICAL COLLEGE  
COURSE OUTLINE**

<b>COURSE:</b> Biology	<b>PREFIX NO.</b> BIO 102	<b>EFFECTIVE DATE</b> Fall 2010	<b>NEXT REVIEW DATE</b> Fall 2011		
<b>TITLE:</b> Biological Science II		<b>CREDITS</b> 4	<b>CONTACTS</b>		
			<b>CLASS - LAB - TOTAL</b>		
			3	3	4

**PREREQUISITES:** High School Diploma or GED

**DESCRIPTION:** This is a continuation of introductory biology, which includes classification of organisms, and structural and functional considerations of all kingdoms (particularly major phyla as well as viruses). Vertebrate animals and vascular plants are emphasized.

**TEXTBOOK(S) OR ALTERNATIVE:** Biology: The Unity and Diversity of Life, 12th edition, by Starr and Taggart.

Symbiosis Lab Manual, 2008 (customized by Prentice Hall for NETC)

**MATERIALS (specifying those to be purchased by student):** The student must purchase the text and lab manual listed above. NETC will provide supplies for laboratories. Latex gloves are not provided, and students may opt to purchase these for themselves.

**COLLATERAL READING:** Students may be asked to review periodical or online resources.

**CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):**

Academic Dishonesty:

As stated in the Policy and Procedures Manual, any student that plagiarizes or caught cheating on any assessment in a course will receive a zero for that assignment. The documentation will be collected and reported to the Dean of Student Services.

Attendance:

According to college policy, a student may miss 20% of the scheduled class periods. When a student exceeds the limit, he or she will be dropped for excessive absences, with the resulting grade of "F".

Tardies:

A student is considered tardy if he/she arrives for class after the scheduled time. Three tardies constitute 1 hour of absence.

Electronic Devices in the Classroom:

To minimize classroom disruptions and to protect the integrity of testing, activated electronic communication devices such as pagers, beepers, and telephones are not permitted in classrooms at NETC. The only exception is for on-call emergency personnel (police, fire, EMS); these students are required to notify the instructor of their need for such devices with documentation

verifying employment. This information must be provided at the beginning of the term and at the beginning of each applicable class session.

Student ID:

It is mandatory that every student wear his or her student ID at all times. During the first week of classes, the instructor will issue a reminder to wear the ID. This reminder is a warning. After the first week of classes, instructors are required to dismiss students without ID from class. The student may get his/her ID (or a new one in Student Services for \$3.00) and return to class before the midpoint of the class. If the student cannot get his/her ID and return to class by midpoint, the instructor will record the absence.

**DISABILITIES STATEMENT:** Students with disabilities are encouraged to contact the Dean of Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Dean of Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See *College Catalog*).

**RESOURCES (A-V, persons, tools/equipment):** The following equipment may be used in lecture or lab settings: TV/VCR/DVD, computer, XGA projector, microscopes, various biological lab equipment as specified in individual labs.

**COURSE TOPICAL OUTLINE (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.**

**TENTATIVE SCHEDULE**

<b><u>CHAPTER</u></b>	<b><u>DESCRIPTION</u></b>
Chapter 45	POPULATION ECOLOGY: Population Demographics; Population Size and Exponential Growth; Limits on Population Growth; Life History Patterns; Human Population Growth; Fertility Rates and Age Structure; Population Growth and Economic Effects
CHAPTER 46	COMMUNITY STRUCTURE AND BIODIVERSITY: Factors Shaping Community Structure; Mutualism; Competitive Interactions; Predator-Prey Interactions; Parasite-Host Interactions; Ecological Succession; Species Interactions and Community Instability; Biogeographic Patterns in Community Structure

**CHAPTER**                      **DESCRIPTION**

- CHAPTER 47      ECOSYSTEMS:  
The Nature of Ecosystems; Nature of Food Webs;  
Energy Flow Through Ecosystems; Biogeochemical  
Cycles; Water Cycle; Carbon Cycle; Nitrogen Cycle;  
Phosphorus Cycle
- CHAPTER 48      THE BIOSPHERE:  
Global Air Circulation Patterns; Ocean, Landforms  
and Climates; Biogeographic Realms&Biomes; Soils of  
Major Biomes; Deserts; Grasslands, Shrublands, and  
Woodlands; More Rain, Broadleaf Forests;  
Coniferous Forests; Tundra; Freshwater Ecosystems;  
Coastal Zones; The Open Ocean
- CHAPTER 25      ANIMAL EVOLUTION - THE INVERTEBRATES:  
Animal Traits and Body Plans; Animal Origins and  
Adaptive Radiation; The Sponges; Cnidarians;  
Flatworms; Annelids; Mollusks; Rotifers and  
Tardigrades; Roundworms; Arthropods;  
Chelicerates; Crustaceans; Insects; Insect  
Diversity and Importance; Echinoderms
- CHAPTER 26      ANIMAL EVOLUTION - THE CHORDATES:  
The Chordate Heritage; Vertebrate Traits and  
Trends; Jawless Lampreys; Jawed Fishes;  
Amphibians; Rise of Amniotes; Reptiles; Birds;  
Mammals
- CHAPTER 23      THE LAND PLANTS:  
Evolution on a Changing World Stage; Evolutionary  
Trends Among Plants; Bryophytes; Seedless Vascular  
Plants; Seed-Bearing Plants; Gymnosperms;  
Angiosperms; Flowering Plant Life Cycle
- CHAPTER 28      PLANT TISSUES:  
The Plant Body; Overview of the Plant Body; Eudicots  
vs. Dicots
- CHAPTER 29      PLANT NUTRITION AND TRANSPORT:  
How Do Roots Absorb Water and Nutrients; How Does  
Water Move Through Plants; How Do Stems and  
Leaves Conserve Water; Water and Mineral Absorption  
in Roots; Water Transport; Conservation of Water;  
Carnivorous Plants (optional-not in text)
- CHAPTER 30      PLANT REPRODUCTION:  
Reproductive Structure of Flowering Plants; Flowers  
and Their Pollinators; A New Generation Begins;  
Flower Sex; Seed Formation; Fruits; Asexual  
Reproduction of Flowering Plants

- CHAPTER 24            FUNGI:  
Fungal Traits and Classification; Zygote Fungi and  
Relatives; Sac Fungi-Ascomyetes; Club Fungi-  
Basidiomycetes; Fungal Symbionts
- CHAPTER 22            PROTISTS – THE SIMPLEST EUKARYOTES  
The Many Protist Lineages; Flagellated Protozoans;  
Foraminiferans and Radiolarians; Ciliates;  
Dinoflagellates; Stramenopiles; Green Algae; Red  
Algae; Amoeboid Cells at the Crossroads
- CHAPTER 21            VIRUSES and PROKARYOTES:  
Viral Characteristics and Diversity; Viral  
Replication; Viroids and Prions; Prokaryotes -  
Enduring, Abundant, and Diverse; Prokaryotic  
Structure and Function; The Bacteria; The  
Archaeans; Evolution and Infection Disease

Each student will receive a copy of the course syllabus defining a topical schedule and testing information on the first day of class.

**TENTATIVE TOPICAL LAB SCHEDULE** AVAILABLE IN LAB MANUAL UNLESS OTHERWISE INDICATED

Ecology Topics

Invertebrate Topics

Vertebrate Topics

Plant Topics

Fungi, Protists, and Prokaryote Topics

Field Trips are possible

**COURSE OBJECTIVES/LEARNING OUTCOMES:**

1. The student will be able to use the scientific method to solve problems.
2. Use laboratory equipment for scientific measurement and observation, including, but not limited to microscopes, balances, and pipettes as well as other measuring devices.
3. Describe factors affecting population growth, community interactions, energy and nutrient flow through ecosystems, and biomes.
4. Describe the general characteristics of the invertebrate phyla.
5. Describe the impact of humans on the biosphere and the effects of

pollution, ozone thinning, solid waste disposal, deforestation, fossil fuel usage and energy usage on humans.

6. Describe the general characteristics of the chordate phyla.
7. Describe the characteristics of the major phyla of plants, the major parts of plants and their functions, and the means by which various plants reproduce.
8. Describe the general characteristics of the major phyla of fungi.
9. Describe the general characteristics of the major phyla of protistans.
10. Describe the major characteristics of the prokaryotes and viruses.

**COLLEGE WIDE COMPETENCIES:**

1. Collect information needed for a given application.
2. Analyze information.
3. Evaluate information to determine usefulness.
4. Apply knowledge to make decisions and solve problems.

**INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES/LEARNING OUTCOMES:**

Lectures, laboratory work, videos, filmstrips and slides on topics in Biology. Science projects, reports, and field trips may also be used to supplement instruction.

**EVALUATIVE METHODS TO APPRAISE OBJECTIVES/LEARNING OUTCOMES:** Course assessments may include tests, lab reports, and other activities as outlined in the syllabus or by handouts.

**CLASS AVERAGE:** The final average will be based on the following:

Lecture test average	=	50%
Lab Average	=	25%
Reports, projects, etc.	=	5%
Final Exam	=	20%

**GRADING SCALE:**

90 - 100	=	A
80 - 89	=	B
70 - 79	=	C
60 - 69	=	D
BELOW 60	=	F