

SYLLABUS

General Biology I (BIO K121⁺)
(CRN #10803) MW 9:30 AM to 10:50 AM
(CRN #10227) MW 12:30 PM to 1:50 PM

Three Rivers Community College
Norwich, Connecticut 06360

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Office Hours:
Mon. & Wed.: 2:00 PM – 4:00 PM
And by appointment

Spring, 2006

Course Description

An introduction to the major principles and concepts of modern biology; Topics to be covered include: molecular and cellular biology, cell division, cellular transport systems, cellular metabolism, the specialization and differentiation of both plant and animal cells and modern genetics.

General Course Rationale

To aid the student in developing an understanding of:

1. The biological sciences as they may be related to other disciplines
2. The life processes and the interrelationships between man and other living organisms
3. The interdependence of all life forms and the natural laws operating that ensure the stability of these life forms
4. Current biological concerns such as pollution, chemical influences, overpopulation, energy, and genetic engineering

Objectives

The student will:

1. be able to describe the requirements of life.
2. be able to describe the characteristics of life shared by living organisms.
3. be able to describe the scientific method through examples.
4. be able to identify the principle elements that make up the body, give their chemical symbols, and summarize the main functions of each.
5. demonstrate knowledge of atomic structure and its relationship to the interaction of atoms to form molecules.
6. demonstrate knowledge of ionic, covalent, and hydrogen bonds and give examples of each.
7. be able to describe the types of organic and inorganic compounds found in the body.
8. be able to define pH in terms of hydrogen ion concentration and be able to identify any given pH as acid, alkaline, or neutral; describe how pH changes are minimized by buffers.
9. demonstrate knowledge of cell organelles and their functions.
10. demonstrate knowledge of various mechanisms of active and passive transport relative to the plasma membrane.
11. demonstrate knowledge of mitosis and meiosis.
12. demonstrate knowledge of the classes of tissues and their functions in both plants and animals.
13. be able to define anabolic and catabolic metabolism.
14. be able to explain how chemical energy (ATP) is released by respiratory processes (anaerobic and aerobic).
15. be able to explain the photosynthesis process.
16. be able to define the term enzyme and explain the composition, classification, and function of enzymes.
17. be able to explain the role of genes in inheritance and how they are passed from one Generation to the next.
18. demonstrate knowledge of the Mendelian laws of genetics.
19. demonstrate knowledge of the various forms of gene interaction.
20. be able to discuss some common forms of human genetic disease.
21. be able to explain the role of DNA and RNA in inheritance.

Method of Evaluation

1. Four lecture exams, maximum 100 questions, multiple choice/true false format:
Wednesday February 15
Wednesday March 15
Wednesday April 19
Wednesday May 17

I use scantron forms. **BRING 2 #2 PENCILS AND ERASERS** on exam days.

2. Four lecture quizzes, maximum 20 questions, multiple choice/true false format:
Wednesday February 1
Monday March 6
Wednesday April 5
Wednesday May 3

The lowest quiz grade will be dropped. The remaining 3 will be averaged and count as one lecture exam. I use scantron forms. **BRING 2 #2 PENCILS AND ERASERS** on quiz days.

3. Three Lab Practicals, maximum 50 questions, microscope slide identifications when applicable and/or short answer/fill-ins:
Friday lab February 17/Tuesday labs February 21
Friday lab March 31/Tuesday labs April 4
Tuesday labs May 9/Friday lab May 12

Procedure

Lectures will be based on text material. Bring your text to class. I encourage questions about lecture material at any time.

Labs will be either from your lab manual or a handout. Bring your text and lab manual and lab handouts to lab. I encourage questions about lab material at any time.

Makeups

In order to schedule a makeup for a lecture exam, a lecture quiz, or a lab practical **you must contact me by phone or email either prior to the scheduled exam, quiz or lab practical date or WITHIN 24 HOURS AFTERWARD. THERE WILL BE NO EXCEPTIONS TO THIS.**

Attendance

Instructional staff assigned to all sections of credit bearing courses at Three Rivers are required to take attendance at each class meeting and retain records of attendance for at least three calendar years. The manner in which attendance is taken is determined at the professional discretion of the instructor. In certain instances, these records are furnished to the Financial Aid Office and the International Student Advisor.

Required Texts

1. Customized BIOLOGY text by Sylvia Mader, McGraw-Hill, 2004, 8th edition
2. BIOLOGY Lab Manual by Sylvia Mader, McGraw-Hill, 2004, 8th edition

Course Outline

I. The Cell

- A. Basic Chemistry
- B. The Chemistry of Organic Molecules
- C. Cell Structure and Function
- D. Membrane Structure and Function
- E. Metabolism: Energy and Enzymes
- F. Photosynthesis
- G. Cellular Respiration

Readings: Mader Text, Chapters 2-8

II. The Genetic Basis of Life

- A. The Cell Cycle and Cellular Reproduction
- B. Meiosis and Sexual Reproduction
- C. Mendelian Patterns of Inheritance
- D. Chromosomal Patterns of Inheritance
- E. DNA Structure and Functions
- F. Gene Activity: How Genes Work
- G. Regulation of Gene Activity and Gene Mutations
- H. Biotechnology and Genomics

Readings: Mader Text, Chapters 9 – 16

Course Evaluation

The 5 lecture exam grades will be averaged and count as 75% of your grade for the course. The 3 lab practical grades will be averaged and count as 25% of your grade for the course.

<u>Grades</u>	<u>Equivalent</u>
A	92.56-100
A-	89.56-92.55
B+	85.56-89.55
B	82.56-84.56
B-	79.56-82.55
C+	75.56-79.55
C	72.56-75.55
C-	69.56-72.55
D+	65.56-69.55
D	62.56-65.55
D-	59.56-62.55
F	0.00-59.55

Academic Integrity Policy

Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to succeed in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the college. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor. Please see Three River's catalog and/or website for a fuller explanation of the school's academic integrity policy.

College Withdrawal Policy

Students have the option of withdrawing from a course prior to the 11th week of class without instructor signature and prior to the 14th week of class (by April 28, 2006) with instructor or advisor signature. A student must initiate the withdrawal by calling (892-5756) or submitting a withdrawal form to the registrar's office.

Disabilities Statement

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Disabilities Counseling Services at 383-5240. To avoid any delay in the receipt of accommodations, you should contact a counselor as soon as possible. Please note that I cannot provide accommodations based upon disability until I have received an accommodation letter from the disabilities counselor.

Cellular Phones and Beepers

Cellular phones and beepers are allowed in class only if they are turned off or turned to a silent mode. Under no circumstances are phones to be answered in class. When there are extenuating circumstances that require a student be available by phone or beeper, the student should speak to the instructor prior to class so that together they can arrive at an agreement.