## COURSE SYLLABUS

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Prepared by: Dr. Lori Rose  
Date: January 16, 2012

Approved by:  
Dean of Instruction

Approved by:  
Vice President of Instruction

### Disabilities/ADA

In accordance with the requirements of the Americans with Disabilities Act (ADA) and the regulations published by the United States Department of Justice 28 C.F.R. 35.107(a), Hill College’s designated ADA coordinator, Debra Hargrove, Vice President, Human Resources and Organizational Development, shall be responsible for coordinating the College’s efforts to comply with and carry out its responsibilities under ADA. Students with disabilities requiring physical, classroom, or testing accommodations should contact Salley Schmid, Director of Counseling, at (254) 659-7651 or sschmid@hillcollege.edu
BIOL 1406 GENERAL BIOLOGY I (MAJORS)

Purpose Statement:

This course is intended to prepare the student for further study in biology and the sciences and to meet the general educational requirements for a lab science. Through comprehensive educational programs and services, which include technical, occupational, general education and college transfer curricula, the college strives to enhance the educational, cultural, and economic development of our service area and to assist both individual and groups to prepare themselves for a more productive life. The purpose of Hill College is defined in the Texas Education Code, Section 130.003, Hill College exists to serve these purposes as they relate first to the local service areas, then to the State of Texas, and finally, to the nation. It has accepted the challenge of providing the resources, curricula, instructional support, and personnel required to best serve the many educational needs of its students and adult clients.

Course Description:

A study of the fundamental principles of biology. The course includes an introduction to the scientific method, physical and chemical properties of living systems, basic cellular processes, genetics, evolution, taxonomy and ecology. Biology for Science Majors.

1. Expanded Course description

Major Areas to be covered in lecture are:

A. Science and the Building blocks of Life
B. Cells and Energy
C. Heredity
D. Molecular Biology
E. Evolution

Major Areas to be covered in laboratory are:

A. Scientific Method
B. Biochemistry
C. Microscopy
D. The Cell
E. Genetics

2. Classroom Hours: 3/3
3. Credit Hours: 4

4. Pre-requisite: None

5. Core Course: The purpose of the Hill College core curriculum is to provide the skills, knowledge, and perspectives that help define the educated person. The core emphasizes the basic intellectual competencies – reading, writing, speaking, and critical thinking.

**Introduction and Purpose:**

This General Biology course is designed for the science major and is intended to fulfill the general education requirements for a laboratory science.

**Instructional Materials:**


Pendarvis and Crawley, Exploring Biology in the Laboratory, Morton Publishing, 2011

Supplies: ScanTron Testing Forms; #2 Pencil with Good Eraser

**Course Objectives and Student Learning Outcomes:**

These learning outcomes and course objectives will include the student demonstrating competence in the following areas:

**Lecture Objectives**

1. Student will be able to define Biology, and list the levels of organization for living things.
2. Students will be able to recognize all of the components of the Cell Theory.
3. Students will be able to demonstrate knowledge of the steps involved in the Scientific Method.
4. Students will be able to demonstrate knowledge of the major cellular organelles and their functions.
5. Student will be able to demonstrate knowledge of the properties of water.
6. Students will be able to demonstrate knowledge of enzymes and how they work.
7. Student will be able to demonstrate knowledge of the fundamental Laws of Mendelian Inheritance.
8. Student will be able to identify and recognize differences between Mitosis and Meiosis.
9. Student will be able to demonstrate knowledge of DNA and how it relates to Protein synthesis
10. Student will be able to demonstrate knowledge of the Mechanisms of Evolutionary change.

Laboratory Objectives

1. Student will be able to demonstrate knowledge of the microscope, its use, parts and function.
2. Student will demonstrate knowledge of safety rules and techniques in the lab.
3. Student will be able to demonstrate knowledge of the scientific method in the form of a lab report.

Course Requirements:

Students will be required to regularly attend both the lecture and laboratory sessions. The Hill College attendance policy will be enforced. Students will be required to take the quizzes, major and minor exams, final exam, and do all laboratory activities.

Methods of Instruction:
This course will be taught using the lecture-laboratory method. Class discussions and audio-visual materials will be included as available and appropriate.

Grading System:

1. Lecture (Major Exams/Minor Exams/Quizzes/Participation/Homework) – 55%
2. Laboratory – 25%
3. Final Exam (Comprehensive) – 20%

Letter grades for the course will be based on the following percentages:

- 90 – 100 A
- 80 – 89 B
- 70 – 79 C
- 60 – 69 D
- Below 60 F
Course Outline:

Lecture Topics
1. Study of Life Ch. 1
2. Chemistry of life Ch. 2
3. Macromolecules Ch. 3

II. Cells and Energy
1. Cells: Working Units of Life Ch. 4
2. Dynamic Cell Membrane Ch. 5
3. Energy, Enzymes, Metabolism Ch. 6, 7, 8
4. Chromosomes and Cell Division Ch. 9
5. Genetics: Mendel Ch. 10
6. DNA and Protein Synthesis Ch. 11, 12

III. Molecular Biology: The Genome in Action
1. Recombinant DNA and Biotechnology Ch. 16

IV. Pattern and Processes of Evolution
1. Reconstructing Phylogenies Ch. 25

Laboratory Topics
1. Scientific Method
2. Measurements
3. Microscope
4. Cell Structure and function
5. Chemistry and macromolecules
6. Diffusion and Osmosis
7. Photosynthesis and Respiration
8. Cell Division
9. Genetics: Mendel
10. DNA technology
11. Enzymes
Outcomes Inventory:

General Biology I will be evaluated through the following methods:

General Biology I Assessment Plan Statement # 1

Intended Outcome # 1. General Biology I students will be able to demonstrate knowledge of biology and its underlying principles.

Assessment Measures, Techniques, and Target Courses/Activities. Students taking General Biology I will complete a final examination in which questions related to Biology and its principles are embedded.

Assessment Criteria/Expected Results. To gather base line data.

General Biology I Assessment Plan Statement #2

Intended Outcome # 2. General Biology I students will be able to demonstrate an understanding in cell structure and function.

Assessment Measures, Techniques, and Target Courses/Activities. Students taking General Biology I will complete a final examination in which questions related to cellular organelles and their functions will be embedded.

Assessment Criteria/Expected Results. To gather base line data.

General Biology I Assessment Plan Statement #3

Intended Outcome # 3. General Biology I students will be able to demonstrate knowledge of the basic properties of water and enzymes.

Assessment Measures, Techniques, and Target Courses/Activities. Students taking General Biology I will complete a final examination in which questions related to water and enzymes are embedded.

Assessment Criteria/Expected Results. To gather base line data.

General Biology I Assessment Plan Statement #4

Intended Outcome # 4. General Biology I students will be able to demonstrate knowledge of the Laws of Mendelian Inheritance.

Assessment Measures, Techniques, and Target Courses/Activities. Students taking General Biology I will complete a final examination in which questions related to the Laws of Mendelian Inheritance are embedded.
Assessment Criteria/Expected Results. To gather baseline data.

General Biology I Assessment Plan Statement #5

**Intended Outcome #5.** General Biology I students will be able to demonstrate an understanding of Cell Division, DNA, and Protein Synthesis.

**Assessment Measures, Techniques, and Target Courses/Activities.** Students taking General Biology I will complete a final examination in which questions related to Cell Division, DNA, and Protein Synthesis are embedded.

Assessment Criteria/Expected Results. To gather baseline data.

General Biology I Assessment Plan #6

**Intended Outcome #6.** General Biology I students will be able to demonstrate an understanding of evolutionary change.

**Assessment Measures, Techniques, and Target Courses/Activities.** Students taking General Biology I will complete a final examination in which questions related to the mechanisms of evolutionary change are embedded.

Assessment Criteria/Expected Results. To gather baseline data.