



# Master Course Syllabus

BIOLOGY 1408 - INTRODUCTORY BIOLOGY

CIP Approval # 26.0101.5103

CIP Area: Life Sciences

Spring, 2006

Prepared by:

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Brenham Campus / Date

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Vice President Academic Affairs / Date

## **BIOL 1408 Introductory Biology**

This course is in the core curriculum.

### **Purpose Statement**

The purpose of the natural science component in the core curriculum is to enable the student to understand the basic concepts in the natural sciences and to apply that understanding to the analysis of current issues in society. Specifically, Biology 1408 is an introductory biology course designed to provide students with an understanding of basic concepts in the life sciences for students not majoring in science. This course may fulfill basic science requirements for an associate or bachelor's degree.

### **Course Description**

An introductory science course for all majors except science. Emphasis will be placed on the nature of biology and scientific problem solving, unity and diversity of life, nature of genetic information, change in organisms, ecological relationships, and current issues in biology.

Three classroom hours and three laboratory hours per week. Credit: Four semester hours.

**Prerequisite:** None.

### **Course Objectives and Student Learning Outcomes**

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

#### **Lecture Objectives:**

1. Elaborate on the process of scientific problem solving.
2. Understand the underlying chemical basis to the unity and diversity of life.
3. Demonstrate knowledge of the structure and function of cells.
4. Understand cellular reproduction.
5. Exhibit an understanding of the process of biological inheritance.
6. Describe the mechanisms of evolutionary change.
7. Display understanding of the role of populations in speciation.
8. Communicate understanding of population and community ecology.
9. Elaborate on distribution and adaptations of organisms.
10. Describe how organisms have met selected challenges in anatomy and physiology.
11. Demonstrate knowledge of the ecology of Texas.
12. Display an understanding of the basics of animal behavior.
13. Communicate effectively an understanding of pertinent biological processes or topics.

#### **Laboratory Objectives:**

1. Demonstrate familiarity with the fundamentals of laboratory safety.
2. Display an understanding of problem solving in science.
3. Exhibit an understanding in data analysis.
4. Use laboratory equipment in a correct manner.
5. Relate biological concepts to laboratory activities.

### **Course Requirements**

Upon completion of the course, the student will have an overall average of  $\geq 60\%$  of the combined lecture and laboratory components of the course. This includes at least 3 major lecture exams and a comprehensive final examination. The student will demonstrate an understanding of the laboratory exercises through analysis of the data and the ability to use the data to solve problems. Laboratory examinations will be designed to address both knowledge and skills.

### **Grading System**

The following areas will be clearly outlined by the instructor in the Course Information Sheet given to the students in the first week of the semester:

1. Major Exams: At least three major exams covering the lecture material, evenly distributed throughout the semester. Information from laboratory experiments may be included on major exams.
2. Laboratory: At least one laboratory examinations on knowledge and skills acquired through laboratory activities.
3. Minor Exams/Quizzes/Homework: Given at the discretion of the instructor.
4. Additional Reports or Projects: Assigned at the discretion of the instructor.
5. Final Exam: Comprehensive exam covering the entire course valued at 20% of course grade.

### **Outcomes Inventory**

Biology 1408 will be evaluated through the following methods:

1. A pretest and posttest instrument to determine the extent of student improvement during the semester.
2. Each Intellectual Competency listed above will be evaluated to measure its attainment:
  - A. Reading:
    - 1) Pre-Test /Post or Exam or quiz over assigned textbook readings OR
    - 2) Lab assignment or exam or quiz over lab book readings OR
    - 3) Written assignment or exam over assigned journal articles.
  - B. Writing:
    - 1) Written assignment or term paper OR
    - 2) Essay question on exam.
  - C. Listening:
    - 1) Exam or quiz over lecture material.
  - D. Critical thinking:
    - 1) Lab assignment or exam or quiz involving problem solving.
  - E. Computer literacy:
    - 1) Interactive assignments using Internet and/or other computer activities.

## **Calendar**

The instructor will ensure that the course content is covered in a manner that fulfills the course objectives. The instructor will also provide Course Information Sheets to the students and the administration. Important details including tentative examination dates and due dates for assignments are provided in the CIS.

### **Suggested Sequence of Lecture Topics**

Process of Scientific Problem Solving.  
Chemical Basis to the Unity and Diversity of Life.  
Structure and Function of Cells.  
Cellular Reproduction and Life Cycles.  
Principles of Inheritance.  
Mechanisms of Evolutionary Change.  
How Population Evolve.  
Population and Community Ecology.  
Distribution and Adaptations of Organisms.  
Selected Challenges in Anatomy and Physiology.  
Animal Behavior.  
Ecology of Texas.  
Conservation Biology.  
Current Issues in Science.

### **Suggested Sequence of Laboratory Topics**

Lab Safety and Scientific Inquiry and Measurement in Science.  
The Study of Cells.  
Cells and their Environment.  
Photosynthesis.  
Reproduction of Cells.  
Introduction to Population Genetics.  
Life Cycles and Reproductive Strategies.  
Ecosystems.  
Collection Techniques for Biological Organisms.  
Sampling Techniques for Population Distributions.  
Biological Diversity: Viruses, Prokaryota, Protista, Fungi  
Biological Diversity: Plantae  
Biological Diversity: Animalia: Invertebrates  
Biological Diversity: Animalia: Vertebrates  
Mammalian Anatomy and Physiology  
Ecology of Texas: Post Oak Savannah

## **Materials**

Required Lecture Materials:

*Basic Concepts in Biology* 6th edition, Cecie Starr: 2006. Thomson Learning, Inc.  
Belmont, CA.

Required Laboratory Materials:

*Encounters with Life*, Morton Publ., Englewood, Colorado. 2005

Recommended:

*A Photographic Atlas for the Biology Laboratory*, 5th ed., 2005. K.M. Van De Graaf  
& J.L. Crowley.

*Solenopsis* Software CD - Biological Programs and Images.