



Master Course Syllabus

Common Course Prefix and Number: BIOL 1407

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CIP Source: Life Sciences

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Biology 1407 General Biology II

This course is in the core curriculum

Purpose Statement

The purpose of the natural sciences 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 1407 is an introductory biology course designed to provide students with an understanding of basic concepts in the life sciences with an emphasis on organisms and their relationship with the environment.

Course Description

Biology 1407- General Biology II.

An introductory survey of current biological concepts that includes evolution, biological diversity, ecology and structure and function of organisms. Prerequisite: Appropriate THEA test score or READ 0306 with a grade of “C” or better. Three class hours and three laboratory hours per week. Credit: Four semester hours.

1. Expanded Course Description

A. Major areas which will be covered in lecture are:

- 1) Evolution
- 2) Population Genetics
- 3) Speciation
- 4) Origin of Early Life
- 5) Human Evolution
- 6) Taxonomy and Systematics
- 7) Viruses
- 8) Survey of Biological Diversity
- 9) Comparative Structure and Function of Plants
- 10) Comparative Structure and Function of Animals
- 11) Adaptation
- 12) Ecology

B. Major areas which will be covered in laboratory are:

- 1) Microscopy
- 2) Evolution
- 3) Population Genetics
- 4) Taxonomy
- 5) Classification and diversity of organisms
- 6) Mammalian Anatomy
- 7) Ecology
- 8) Ecosystems
- 9) Symbiosis

2. Classroom Hours: Three lecture hours and three laboratory hours per week.

3. Credit Hours: Four credit hours.

4. Prerequisite: None

5. Core Course: This is a Core Course in the 42-hour Core of Blinn College; more can be found at www.blinn.edu/corecurriculum/. As such, students will develop proficiency in the appropriate Intellectual Competencies, Exemplary Educational Objectives, and Perspectives as listed below.

A. Intellectual Competencies

- 1) **Reading:** The ability to analyze and interpret a variety of printed materials, books, documents and articles – above the 12th grade level.
- 2) **Writing:** The ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience - above the 12th grade level.
- 3) **Listening:** The ability to analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing, reading – above 12th grade level.
- 4) **Critical Thinking:** The ability to think and analyze at a critical level.
- 5) **Computer Literacy:** The ability to understand our technological society, use computer-based technology in communications, solving problems, acquiring information.

B. Exemplary Educational Objectives

- 1) Understand and apply method and appropriate technology to the study of natural sciences.
- 2) Recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings and analyses and interpretation both orally and in writing.
- 3) Identify and recognize the differences among competing scientific theories.
- 4) Demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
- 5) Demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

C. Perspectives

- 1) Recognize the importance of maintaining health and wellness.
- 2) Develop a capacity to use knowledge of how science and the environment affect their lives.
- 3) Develop personal values for ethical behavior
- 4) Use logical reasoning in problem solving.
- 5) Integrate knowledge and understand the interrelationships of the scholarly disciplines.

Course Objectives and Student Learning Outcomes

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

Lecture Objectives:

1. Differentiate between science and other fields of knowledge and learning.
2. Explain the role of evolution in the history of life on Earth.
3. Describe the mechanisms of evolutionary change.
4. Describe the classification of living organisms.
5. Identify and characterize the major taxonomic categories.

6. Describe the structure and life processes of plants.
7. Describe the structure and life processes of animals.
8. Describe the interactions of organisms with their environment.

Laboratory Objectives:

1. Demonstrate familiarity with the fundamentals of laboratory safety.
2. Display an understanding of problem solving in science.
3. Use laboratory equipment in a correct manner.
4. 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.

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 Exams: At least two laboratory exams 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: Given at the discretion of the instructor.
5. Final Exam: Comprehensive exam covering the entire course.

Outcomes Inventory

Biology 1407 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- and Post- Test score or Exam or quiz over assigned textbook readings or
 - 2) Lab assignment or exam or quiz over lab book readings or
 - 3) Exam or written assignment over assigned journal articles.
 - B. **Writing:**
 - 1) Written review of journal article or term paper or
 - 2) Essay question on exam.
 - C. **Listening:**
 - 1) Exam or quiz over lecture material or
 - 2) Quiz over video viewed.

D. Critical thinking:

- 1) Lab assignment or exam involving problem solving.

E. Computer literacy:

- 1) Quiz over 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.

Lecture Topic

1. Evidence for Evolution
2. Population Genetics
3. Speciation
4. History of Life on Earth
5. Human Evolution
6. Taxonomy and Systematics
7. Viruses and Bacteria
8. Protists and Fungi
9. Evolution of Plants
10. Plant Physiology
11. Acoelomate Animals
12. Protostomes and Deuterostomes
13. Animal Tissues
14. Organ Systems
15. Ecology and the Environment

Laboratory Topic

1. Microscopy
2. Evolution
3. Population Genetics
4. Taxonomy
5. Eubacteria
6. Protists
7. Fungi
8. Seedless Plants
9. Seed Plants
10. Introduction to Invertebrates
11. Protostomes
12. Deuterostomes
13. Mammalian Anatomy
14. Ecology and Ecosystems
15. Symbiosis

Materials:

Required:

Lecture Materials:

Biology, 7th ed. 2005. Raven, Johnson, Losos & Singer, McGraw Hill Higher Education.

Laboratory Materials:

Brenham- Reflections In Biology, 3rd edition, Volume 2 – 1407, Greg Phillips and Eric Winkler: 2005, Pearson Publishing Co.

Bryan – *Biology Laboratory Manual*, 8th, 2004, S. Mader. McGraw-Hill Co.

Recommended:

Student Study Guide for Biology, 7th ed., 2005. Raven, Johnson, Losos & Singer. McGraw-Hill Co.

Solenopsis Software CD - Biological Programs and Images.

Photographic Atlas for the Biology Laboratory, 4th ed., 2001. K. VanDe Graff & J. Crawley. Morton Publ. Co.