### COURSE SYLLABUS

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<th>Course prefix and Number</th>
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<td>BIOL1407</td>
<td>General Biology II (Majors)</td>
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Prepared by: Dr. Lori Rose      Date: January 16, 2012

Approved by:

Division Chair Date

Approved by:

Vice President of Instruction Date

Hill College is an affirmative action/equal opportunity education institution and employer. Its students and employees are selected and/or assigned without regard to their race, color, age, sex, handicap or national origin, consistent with title IX and VIII of the Civil Rights Act of 1964, and Title IX of the Higher Education Acts as amended in 1972, and with Executive Order 11246 as amended by the Executive Order 11375.
Catalog Description:

BIOL1407 Biology II (Science Majors)

Continuation of BIOL1406 (Biology I). Fundamental principles of living organisms including evolutionary diversification; taxonomy/systematic; functional plant/animal anatomy and physiology; and concepts in ecology and conservation biology.

Lecture Hours: 3 Lab Hours: 3 Semester Credit Hours: 4

Prerequisites:

Success with BIOL1406; Biology I.

Introduction and Purpose:

This course is intended to fulfill the second of a 2-semester Biology lab course requirement for students majoring in the sciences.

Instructional Materials:


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

Supplies: Classroom supplies, surgical gloves (for dissections), colored pencils, dissecting kit.

Objectives/Student Learning Outcomes:

At the completion of this course, the student should be able to:

1. Explain how the process of evolution resulted in the modern 6-kingdom taxonomic system, including varieties of plants and animals as well as developmental processes such as protostome/deuterostome distinctions.
   a. Using structural, physiological and genetic evidence, explain the role of prokaryotes both in early evolutionary processes and current ecological interactions.
   b. Describe various hypotheses for the formation of eukaryotic cells and explain their diversity and significance for higher life forms on Earth.
   c. Explain the physiological, structural, and ecological characteristics of the various groups of fungi.
   d. Discuss the lower (seedless) plants in terms of evolutionary implications, life history differences, and ecological significance.
   e. Describe the evolution, diversification, and life history/structural differences among the seed-producing plants.
   f. Describe the evolutionary origins and body plans of the various animal groups, including comparisons of feeding strategies, life cycles, and the most primitive groups of aquatic animals.
g. Compare and contrast embryologic characteristics and modern examples of protostome and deuterostome animals.

2. Describe plant anatomy and physiology in general and specific terms.
   a. Discuss various levels of organization of plants including cellular, tissue, and anatomical characteristics
   b. Describe typical processes undertaken by plants including internal transport, nutrition, growth regulation, and response to stimuli.
   c. Discuss the many varieties of both sexual and asexual reproduction in plants.

3. Describe animal anatomy and physiology in general and specific terms.
   a. Explain general physiological processes undertaken by animals including internal homeostatic and temperature regulation, hormones, and immune system.
   b. Describe and discuss animal internal control mechanisms associated with the nervous, sensory and hormonal systems.
   c. Explain various animal approaches to reproduction including sexual/asexual methods and embryonic/early development.
   d. Describe locomotion in animals from the standpoint of contractile and skeletal mechanisms as well as body design.
   e. Discuss various animal approaches to gas exchange and circulatory systems in the animal groups.
   f. Describe mechanisms used by various animal groups in terms of nutrient acquisition including procurement, digestion, and absorption.
   g. Discuss various animal approaches to problems associated with salt/water balance and nitrogen excretion.

4. Describe the various levels of ecology including conservation aspects.
   a. Describe various levels of behavior and behavioral ecology of different animal groups.
   b. Explain ecological concepts in terms of geographic, population, community, and larger ecological units.
   c. Discuss the concepts associated with conservation biology including methods, challenges, and the potential consequences of failure.

The students’ success in completing these objectives will be measured using a set of examinations and assignments described in detail under the section of this syllabus headed “Methods of Evaluation”.

Annual Assessment Plan will be implemented each year to review course. (attached)

**Method of Instruction:**

This course will be taught using traditional face-to-face lecture/laboratory methods including opportunities for the students to interact with the instructor.

When possible, the learning environment will be enhanced with appropriate audio-visuals, internet/web support, and similar such learning mechanisms.
Laboratory skills will be taught and demonstrated by qualified personnel.

**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:**

Class policies:

Regular attendance at class and lab is expected. The Hill College attendance policy will be rigorously enforced. Disruptions will not be tolerated.

**Topic Outline**

I. Evolution of Diversity
   A. Prokaryotic Domains; Archaea and Bacteria
   B. Eukaryotes; Origins and Diversity
   C. Seedless Plants
   D. Evolution of Seed Plants
   E. Fungi
   F. Animals; Origins and Evolution of Body Plans
   G. Protostome Animals
   H. Deuterostome Animals

II. Flowering Plants: Form and Function
   A. The Plant Body
   B. Transport in Plants
   C. Plant Nutrition
   D. Plant Regulation of Growth
E. Reproduction in Flowering Plants
F. Plant Responses to Stimuli

III. Animals: Form and Function
    A. Physiology, Homeostasis, and Temperature regulation
    B. Animal Hormones and Immune system
    C. Animal Reproduction
    D. Animal Development
    E. Neurons and Nervous Systems
    F. Sensory Systems
    G. Mammalian Nervous System
    H. Animal Effectors
    I. Gas Exchange
    J. Circulatory Systems
    K. Nutrition, Digestion, and Absorption
    L. Salt & Water Balance and Nitrogen Excretion

IV. Ecology
    A. Ecology and the Distribution of Life
    B. Behavior and Behavioral Ecology
    C. Population Ecology
    D. Community Ecology Ecosystems & Global Ecology
    E. Conservation Biology