

COURSE PROFICIENCY OUTLINE

BIOLOGY II - 363

5 Credits

Purpose

Biology II - 363 is a second-year course in biology for students with extended interests in science. It is expected that the students have completed high school biology and chemistry with a high degree of success. A course in physics is highly recommended although not required. The outcomes of this course will include the development of the students' knowledge of higher-level biological principles, the development of critical thinking skills, and the development of an understanding of the applications of biology to natural phenomena.

I. Student Outcomes 5.1, 5.3, 5.4, 5.5

- A. Students will demonstrate an understanding of the terminology, facts, concepts and applications of the Biology II course.
- B. Students will demonstrate the ability to utilize Biology II learnings and materials in everyday life and in the further learning of science.
- C. Students will demonstrate an understanding of biology and technology and the interrelationships of humankind, resources, energy and the environment.
- D. Students will utilize already attained competencies in science critical thinking skills, study and learning skills, reading, writing and listening skills, and laboratory manipulative and investigative skills and further these college preparatory learning skills.

II. Content 5.1, 5.3, 5.4, 5.5, 5.10

- A. An introduction to Life on Earth
- B. Life of a Cell
 - 1. Atoms, molecules, and life
 - 2. Biological molecules
 - 3. Energy flow in the life of a cell
 - 4. Cell membrane structure and function
 - 5. Cell structure and function
 - 6. Capturing solar energy: photosynthesis
 - 7. Harvesting energy: glycolysis and cellular respiration
- C. Inheritance
 - 1. DNA: molecule of heredity
 - 2. Gene expression and regulation
 - 3. Continuity of life: cellular reproduction
 - 4. Patterns of inheritance
 - 5. Biotechnology
- D. Evolution
 - 1. Principles of Evolution
 - 2. How organisms evolve
 - 3. The origin of species

- E. Microbiology
- F. Anatomy and Physiology
 - 1. Plant form and function
 - 2. Detailed study of shark
 - 3. Detailed study of mammal (pig or cat)
- G. Ecology
 - 1. Population growth and regulation
 - 2. Community interactions and ecosystems

III. Activities and Materials

- A. Text - Audesirk & Audesirk - Biology: Life on Earth
- B. Classwork
 - 1. Lectures, notetaking, discussions, simulations and demonstrations, and regular tests and quizzes will be utilized.
 - 2. College preparatory skills such as reading, writing, listening, information processing and reporting, and science-learning skills will be utilized.
- C. Laboratory activities - developing an attitude toward safety
 - 1. Advanced microscopy studies and techniques
 - 2. Studies developing scientific skills and science critical thinking skills
 - 3. Advanced studies of biological processes and their applications
 - 4. Advanced studies in bacteriology, anatomy and physiology, and drosophila genetics
 - 5. Advanced studies of ecological principles and simulations and the interrelationships of organisms and their environment
- D. Assignments - to be carefully checked and reviewed by the teacher and students utilizing college preparatory reading, writing, and science organization and thinking skills.
 - 1. Readings - text and other sources, outlining and the organization of information
 - 2. Written answers to questions
 - 3. Laboratory and other reports utilizing varying techniques and methods
 - 4. Science study-learning assignments

IV. Evaluation

- A. Students will be expected to complete classwork and homework learning assignments, laboratory work and reports, and make up work missed whenever it is practical to do so.
- B. Students will be expected to demonstrate a high level of proficiency in all of the goals and objectives of the course within the previously defined content and process areas.

C. The evaluation of student proficiencies shall consist of tests and quizzes, written assignments and reports, lab reports, and the teacher's regular observations of the students' proficiencies, involvement and learnings in laboratory activities and in the classroom environment.

D. Students will take a comprehensive final examination. This exam will count as 20% of the final grade.

E. The final grade represents the teacher's professional judgment of the student's performance and all of the aforementioned activities and/or requirements are included in the evaluative process.

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revised 6/04
Reviewed 8/2010
Reviewed 8/2011

