

COURSE PROFICIENCY OUTLINE

BIOLOGY I – 361

Honors 5 Credits

Purpose

Biology I - 361 is offered as a course to be elected by academically talented and gifted youngsters who have the interest and motivation to succeed in the abstract modern biology program. Scientific principles and skills taken from previous science courses will be utilized. The outcomes of the course would include the development of the students' knowledge of the sciences, of our resources, and of the impact of science on everyday life.

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 biology.

B. Students will demonstrate the ability to utilize biology 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, 5.2, 5.3, 5.4, 5.5, 5.10

A. Introduction - Biology, an interaction

1. Science is inquiry

2. Living things

3. Ecological relationships, populations, graphic skills

4. Humankind and the environment; behavior and societies

5. The interrelationship of humans, energy and the environment - management of resources

6. Tools of the Biologist; the microscope and stereoscope

B. Classification and organization in Biology

1. Historical development

2. Various models and applications

C. Life processes and biochemistry

1. Utilization of principles of chemistry and physics interrelated to the understanding of biological processes.

D. Cell structure and function; perpetuation; and microscopic organisms

1. Generalized and specific structures and functions

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2. Meiosis and mitosis, perpetuation, cellular reproduction and development
3. Protozoans, algae and fungi, bacteria and viruses, applications
- E. Plants - A Survey
 1. Nonvascular and vascular
 2. Angiosperm - structure and function
- F. Animals - an anatomical survey
 1. Structure and function; organization
 2. Systems - digestive, transport (circulatory), respiratory (energy utilization), excretory, regulatory, reproduction and development, animal skeletal and muscular; examples and applications.
- G. Humans
 1. Major systems
 2. Functions of each system
- H. Heredity and genetics - classical and molecular concepts
 1. Concepts of development
 2. Statistical interpretation and theory
 3. Genetic continuity; origin of species - various models
 4. Applications to specific problems
 5. Biochemical models
- I. Evolution
 1. Hypothesis for the origin of life
 2. Evidence for the theory of evolution
 3. Darwin's Theory
 4. Diversity of life resulted from evolution
- J. Career development and science careers and opportunities
 1. General principals of career education - attitudes, work habits and competencies
 2. Career information related to all of the sciences
 3. Information about current biological issues

III. Activities and Materials

A. Text - Starr - Biology: Concepts and Applications

B. Classwork

1. Lectures, notetaking, discussions, demonstrations, audio-visual materials 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. Microscope and stereoscope use and techniques
2. Observations of live materials
3. Studies developing scientific skills and science critical thinking skills
4. Studies of scientific principles and their applications toward the course content

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5. Studies of basic organs, systems, organisms, structures and functions-dissection
6. Studies of the interrelationships or 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 complete classwork and homework learning assignments, laboratory work and reports on time, and make up missed work 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. 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 student's proficiencies, involvement and learnings in laboratory activities and in the classroom environment.
- C. Students will take a comprehensive final examination. This exam will count as 20% of the final grade.
- D. 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.

Teachers in every discipline will include opportunities wherein students will reinforce writing skills through homework assignments, classwork activities, and special assignments (reports) if required, by writing in complete sentences, using correct spelling and punctuation.

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revised 6/04

Reviewed

8/2011

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