

PETERS TOWNSHIP SCHOOL DISTRICT

CORE BODY OF KNOWLEDGE (CBK)

BIOLOGY ACADEMIC GRADE 10

For each of the sections that follow, students may be required to understand, apply, analyze, evaluate, or create the particular concepts being taught.

COURSE DESCRIPTION:

Biology Academic is a lab science course for academic sophomores. This is a survey course in which students are given the solid foundation they need to understand the expanding role of biology in modern society. Concepts for study include biological processes and biochemistry principles, bioenergetics, ecology, evolution, cellular biology and genetics. Students will develop and apply critical thinking, scientific process, and communication skills by performing laboratory activities, analyzing theories, and creating independent scientific literary and/or experimental research.

STUDY SKILLS:

- Organize class materials.
- Prepare for quizzes, tests, and state exams through the development of study skills and test taking strategies.

1. BASIC BIOLOGICAL PRINCIPLES

- Scientific method
- Characteristics of living things
- Laboratory techniques

2. ECOLOGY

- Levels of organization
- Energy flow through an ecosystem
- Matter cycles
- Abiotic/biotic factors
- Biodiversity
- Biomes
- Populations
- Human interactions with the environment

3. CHEMICAL BASIS OF LIFE

- Atoms and bonds
- Properties of water
- Solutions and pH scale

- Biological molecules (carbohydrates, lipids, proteins, nucleic acids)
- Biochemical reactions
- Enzymes

4. CELLS

- Cell theory
- Cell membrane and cell parts
- Microscopes
- Levels of organization
- Mitosis

5. BIOENERGETICS

- ATP
- Photosynthesis
- Cellular Respiration

6. GENETICS

- Mendel's experiments and Punnett squares
- Meiosis
- DNA and chromosomes
- Replication
- RNA and protein synthesis
- Genetic engineering
- Human genetics

7. THEORY OF EVOLUTION

- Evolutionary scientists and their theories
- Natural selection
- Evolution of populations
- Evolution and genetics
- Modern evolutionary theory
- Speciation
- Taxonomy

MATERIALS AND SUPPLEMENTALS:

Miller/Levine Biology: textbook, lab manuals, and study guides

Biology Item and Scoring Sampler 2011 (Keystone Exam)

<http://www.pbs.org/wgbh/evolution/educators/>

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