PETERS TOWNSHIP SCHOOL DISTRICT

CORE BODY OF KNOWLEDGE

BIOLOGY FOR LIFE
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:

This course is the lowest level, application-based biology course taught at the high school. 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. It covers the following units: themes in the study of life, chemistry of life, photosynthesis and cellular respiration, ecology, human heredity, and evolution.

STUDY SKILLS:

- Maintain an organized science binder.
- Adequately prepare for quizzes and exams through the development of study skills.

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

- 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
- History of life
- Taxonomy

MATERIALS:

- Holt McDougal's *Biology*: textbook, study guides and interactive readers
- PBS Evolution website: http://www.pbs.org/wgbh/evolution/

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