



Ephrata High School  
Course Syllabus



Principles of Biology  
4020

### *I. Course Description*

The curriculum contains the core content determined by the Pennsylvania State Standards. The material is presented from two different perspectives. The material is presented from two different perspectives. The first perspective is on organisms from the cellular and molecular level. Molecular components of cells and their function will be addressed during this section. Heredity and the function of DNA will be included here. The second perspective will be the ecosystem and how organisms fit into the biosphere. Time will be spent on interaction of organisms at the population, community, and ecosystem level. Study of adaptations and evolution will tie the study of the two perspectives together.

This course is designed for the student who may be looking to pursue an area other than science or the medical field for post secondary or technical training. This course moves at an average pace. Students will receive assignments, labs, and projects for reinforcement of essential concepts.

### *II. Materials & Equipment*

Biology, published by Prentice Hall, is the textbook used for this course. The instructor provides all laboratory equipment.

### *III. Course Goals & Objectives*

1. Acquire a body of knowledge regarding living organisms
2. Attempt to understand the organization of the biological world
3. Develop an appreciation of the diversity of life forms
4. Become acquainted with the uses of biological knowledge
5. Develop appreciation for molecular biology and genetic research and its role in future health

### *IV. Course Topics (Summary Outline)*

#### Biochemistry

- Carbon
- Carbohydrates
- Lipids
- Proteins and Enzymes
- Nucleic Acids

#### Microscopes

- Cells, Cell Membrane and Transport
- Cell Theory

- Cell types
- Organelles
- Active and Passive Transport
- Photosynthesis and Cellular Respiration
- Cell Division
  - Mitosis
  - Meiosis
- Development
- DNA Structure and Function
  - Transcription, Translation, and Replication
- Genetics
  - Mendelian Genetics
  - Types of Inheritance
  - Probability and Solving Genetic Problems
  - Biotechnology
    - Cloning and stem cells
- Ecology – Interdependence of Life
  - Populations Ecology
  - Communities
  - Ecosystems structure and function
  - Flow of Matter and Energy
- Evolution
  - Adaptation
  - Natural Selection
  - Mechanisms of Evolution
  - Evidence
- Classification
  - 6 Kingdoms
  - Biodiversity
  - Taxonomy of Living Things
  - Viruses/Bacteria

## *V. Assignments & Grading*

A combination of tests, quizzes, laboratory reports, classroom assignments, homework, projects, and participation will be used to evaluate students. Projects will be assigned throughout the year. Each project and its evaluation will be described in detail when the assignment is made. Everyone is expected to be an active class participant. A comprehensive final exam will be given.