



School District of Marshfield Course Syllabus

Course Name: Advanced Placement Biology Honors

Length of Course: Year

Credits: 1

Course Description:

It is important for a biology student to become aware of the fact that the details learned in class are a tool for comprehending biology's impact in a global society. Students will examine biological concepts including Molecules and Cells, Heredity and Evolution, and Organisms and Populations. Even though the AP Biology curriculum covers a broad range in topics, it is important to link the diverse concepts we will be studying. Students should be aware that there are unifying themes among the diverse biological concepts.

Learning Targets:

- The course emphasizes the biological concepts in the three overarching topics, the first being **Molecules and Cells**, the second being **Heredity and Evolution**, the third being **Organisms and Populations**.
- The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing evidence for an understanding of science as a process rather than the accumulation of facts.
- The course provides students with an opportunity to develop a conceptual framework for modern biology emphasizing recognition of evolution as the foundation of modern biological models and thought.
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Science as a Process**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Evolution**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Energy Transfer**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Continuity and Change**

- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Relationship of Structure to Function**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Regulation**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Interdependence in Nature**
- The integration of the general topics of biology through the eight major themes as specified in the Course Description. **Science, Technology and Society**
- Applications of biological knowledge and critical thinking to environmental and social concerns.
- The course includes a laboratory. Students will spend approximately 25% of instructional time engaged in laboratory work.

First Quarter – 9 weeks

1. Unit 1: The Chemistry of Life (1.5 weeks)
 - A. Ch 1 Exploring Life
 - B. Ch 2 The Chemistry of Life
 - C. Ch 3 Water and the Fitness of the Environment
 - D. Ch 4 Carbon and the Molecular Diversity of Life
 - E. Ch 5 The Structure and Function of Macromolecules
2. Unit 2: The Cell (7.5 weeks)
 - A. Ch 6 A Tour Of The Cell
 - B. Ch 7 Membrane Structure Function
 - C. Ch 8 An Introduction To Metabolism
 - D. Ch 9 Cellular Respiration
 - E. Ch 10 Photosynthesis
 - F. Ch 11 Cell Communication
 - G. Ch 12 The Cell Cycle

Second Quarter – 9 weeks

3. Unit 3: Genetics (7 weeks)
 - A. Ch 13 Meiosis and Sexual Life Cycles
 - B. Ch 14 Mendel and the Gene Idea
 - C. Ch 15 The Chromosomal Basis of Inheritance
 - D. Ch 16 The Molecular Basis of Inheritance
 - E. Ch 17 From Gene to Protein
 - F. Ch 18 The Genetics of Viruses and Bacteria
 - G. Ch 19 Eukaryotic Genomes
 - H. Ch 20 DNA Technology and Genomics
 - I. Ch 21 The Genetic Basis of Development
4. Unit 4: Mechanisms of Evolution (2 weeks)
 - A. Ch 22 Descent With Modification – A Darwinian View of Life

- B. Ch 23 The Evolution of Populations
- C. Ch 24 The Origin of Species
- D. Ch 25 Phylogeny and Systematics

Third Quarter – 9 weeks

- 5. Unit 5: The Evolutionary History of Biological Diversity (4 weeks)
 - A. Ch 26 The Tree of Life – An Introduction to Biological Diversity
 - B. Ch 27 Prokaryotes
 - C. Ch 28 Protists
 - D. Ch 29 Plant Diversity – How Plants Colonized Land
 - E. Ch 30 Plant Diversity – The Evolution of Seed Plants
 - F. Ch 31 Fungi
 - G. Ch 32 An Introduction to Animal Diversity
 - H. Ch 33 Invertebrates
 - I. Ch 34 Vertebrates
- 6. Unit 6: Plant Form and Function (5 weeks)
 - A. Ch 35 Plant Structure, Growth, and Development
 - B. Ch 36 Transport in Vascular Plants
 - C. Ch 37 Plant Nutrition
 - D. Ch 38 Angiosperm Reproduction and Biotechnology
 - E. Ch 39 Plant Responses to Internal and External Signals

Fourth Quarter – 9 weeks

- 7. Unit 7: Animal Form and Function (4 weeks)
 - A. Ch 40 Basic Principles of Animal Form and Function
 - B. Ch 41 Animal Nutrition
 - C. Ch 42 Circulation and Gas Exchange
 - D. Ch 43 The Immune System
 - E. Ch 44 Osmoregulation and Excretion
 - F. Ch 45 Hormones and the Endocrine System
 - G. Ch 46 Animal Reproduction
 - H. Ch 47 Animal Development
 - I. Ch 48 Nervous System
 - J. (10) Ch 49 Sensory and Motor Mechanisms
- 8. Unit 8: Ecology (5 weeks)
 - A. Ch 50 An Introduction to Ecology and the Biosphere
 - B. Ch 51 Behavior Ecology
 - C. Ch 52 Population Ecology
 - D. Ch 53 Community Ecology
 - E. Ch 54 Ecosystems
 - F. Ch 55 Conservation Biology and Restoration Ecology

Required Core Resources: 7th Edition Biology, Campbell & Reece