

# AP Biology Syllabus

**Textbook:** Campbell, Neil and Reece, Jane. *Biology: 7<sup>th</sup> edition*. Pearson Education, 2005.

**Overview:** AP Biology is a full year, one credit college level course offered to advanced sophomores who have completed Environmental Science at the Honors level with a B+ or better as freshmen, have a teacher recommendation, and have successfully completed the AP Biology entrance exam. This course is also offered to Seniors as a fourth science credit who have successfully completed CP or Honors biology during their sophomore year with a B+ or better, and have also successfully completed CP, Honors, or AP chemistry during their junior year. The focus of this course will be making connections between the content objectives and the eight major themes: Science as a process (NOS), Evolution, Energy Transfer, Continuity and Change, Relationship of Structure to Function, Regulation, Interdependence in Nature, and Science, Technology, and Society (NOS). The content objectives to be covered are described below. The percentages represent the relative amount of time we will spend on those topics but not necessarily in this sequence.

## I. Molecules and Cells (25%)

- a. Chemistry of Life 7%
  - i. Water
  - ii. Organic molecules in organisms
  - iii. Free energy changes
  - iv. Enzymes
- b. Cells 10%
  - i. Prokaryotic and eukaryotic cells
  - ii. Membranes
  - iii. Subcellular organization
  - iv. Cell cycle and its regulation
- c. Cellular Energetics 8%
  - i. Coupled Reactions
  - ii. Fermentation and cellular respiration
  - iii. Photosynthesis

## II. Heredity and Evolution (25%)

- a. Heredity 8%
  - i. Meiosis and gametogenesis
  - ii. Eukaryotic chromosomes
  - iii. Inheritance patterns
- b. Molecular Genetics 9%
  - i. RNA and DNA structure and function
  - ii. Gene regulation
  - iii. Mutation
  - iv. Viral structure and replication
  - v. Nucleic acid technology and applications
- c. Evolutionary Biology 8%
  - i. Early evolution of life
  - ii. Evidence for evolution
  - iii. Mechanisms of evolution

## III. Organisms and Populations (50%)

- a. Diversity of Organisms 8%
  - i. Evolutionary patterns
  - ii. Survey of the diversity of life
  - iii. Phylogenic classification
  - iv. Evolutionary relationships
- b. Structure and Function of Plants and Animals 32%
  - i. Reproduction, growth, and development
  - ii. Structural, physiological, and behavioral adaptations
  - iii. Response to the environment
- c. Ecology 10%
  - i. Population Dynamics
  - ii. Communities and ecosystems
  - iii. Global issues