



**Course Name:** AP Biology v20

**Course Credit:** 1.0

**Course Estimated Completion Time:** 2 segments/32-36 weeks

**Course Description:** This course is designed to provide a college-level experience and prepare students for the AP exam in early May. Students will develop a foundation for understanding biological concepts through scientific inquiry, investigations, interactive experiences, higher-order thinking, real-world applications, writing analytical essays, statistical analysis, interpreting and collecting data. AP Biology 'big ideas' include system interactions, evolution, energetics, information storage, and transmission. Students will participate in a variety of engaging activities that enhance their mastery of biology concepts. This course fulfills one required science credit for high school graduation. Prerequisite: Biology I, Chemistry I and Algebra I recommended.

**Prerequisites:** Biology I, Chemistry I, Algebra I

**Honors Lessons:** No

**Course Profile (Includes Honors, if applicable)**

Type of Assessment	Quantity	Location(s)
Teacher-graded	12	2.06, 2.07, 3.04, 3.05, 4.05, 4.06, 5.01, 6.01, 6.08, 7.02, 8.01, 8.02, Segment One and Two Collaborations
Auto-graded	38	
Partial Auto-graded	20	Quizzes: 1.01, 1.04, 2.02, 3.06, 4.04, 5.03, 6.06, 7.04, 8.04 Module Exams 1.06, 2.10, 3.08, 4.08, 5.08, 7.11, 8.10 Segment Exams: 4.09, 8.11
Discussion-Based (DBA)	8	1.05, 2.09, 3.07, 4.07, 5.07, 6.09, 7.10, 8.09
Collaboration	2	Collaboration Module
Project-based	0	
<b>Total Assessments</b>	<b>70</b>	

**Types of Assessments (Includes Honors, if applicable)**

Type of Assessment	Available	Type of Assessment	Available
Multiple Choice	Yes	Essay	Yes
Worksheets	Yes	Collaborative	Yes
Web 2.0	Yes	Short Response	Yes
Project - Based	No	Labs	Yes
Self - Check	Yes	DBAs	Yes

## Scope and Sequence

### Segment 1

#### Module 01—Chemistry of Life

- Hydrogen Bonding
- Properties of Water
- Elements of Life
- Biological Macromolecules
- Structure and Function of Macromolecules

#### Module 02—Cell Structure and Function

- Cell Structure and Function
- Cell Size
- Membrane Transport
- Facilitated Diffusion
- Tonicity and Osmoregulation
- Mechanism of Transport
- Cell Compartmentalization

#### Module 03—Cell Energetics

- Enzymes
- Environmental Impacts on Enzymes
- Cellular Energy
- Energy Transfer
- Photosynthesis
- Cellular Respiration
- Fitness

### Segment 2

#### Module 04—Cell Communication and Cell Cycle

- Cell Communication
- Signal Transduction
- Changes to Signal Transduction
- Feedback
- Cell Cycle
- Regulation of Cell Cycle

#### Module 05—Heredity

- Meiosis
- Meiosis and Genetic Diversity
- Mendelian Genetics
- Non-Mendelian Genetics
- Environmental Effects on Phenotype
- Chromosomal Inheritance

#### Module 06—Gene Expression and Regulation

- DNA and RNA Structure
- Replication
- Transcription and RNA Processing

- Translation
- Regulation of Gene Expression
- Gene Expression and Cell Specialization
- Mutations
- Biotechnology

#### Module 07—Natural Selection

- Natural Selection
- Artificial Selection
- Population Genetics
- Hardy-Weinberg Equilibrium
- Phylogeny
- Speciation and Extinction
- Variation in Populations
- Origins of Life

#### Module 08—Ecology

- Responses to the Environment
- Energy Flow Through Ecosystems
- Population Ecology
- Effects of Density of Populations
- Community Ecology
- Biodiversity
- Disruptions of Ecosystems