



# AP<sup>®</sup> Biology

## Your Course at a Glance

### Plan

The course at a glance provides a useful visual organization of the AP Biology components, including:

- Sequence of units, along with approximate weighting and suggested pacing. Please note, pacing is based on 45-minute class periods, meeting five days each week for a full academic year.
- Progression of topics within each unit.
- Spiraling of the big ideas and science practices across units.

### Teach

#### SCIENCE PRACTICES

Science practices spiral throughout the course.

- |                          |                                       |
|--------------------------|---------------------------------------|
| 1 Concept Explanation    | 4 Representing and Describing Data    |
| 2 Visual Representations | 5 Statistical Tests and Data Analysis |
| 3 Questions and Methods  | 6 Argumentation                       |

### Assess

Assign the Progress Checks—either as homework or in class—for each unit. Each Progress Check contains formative multiple-choice and free-response questions. The feedback from the Progress Checks shows students the areas where they need to focus.

## UNIT 1

### Chemistry of Life

~9–11	Class Periods	8–11%	AP Exam Weighting
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- |   |   |
|---|---|
| 2 | 1.1 Structure of Water and Hydrogen Bonding |
| 2 | 1.2 Elements of Life                        |
| 2 | 1.3 Introduction to Macromolecules          |
| 1 | 1.4 Carbohydrates                           |
| 6 | 1.5 Lipids                                  |
| 2 | 1.6 Nucleic Acids                           |
| 6 | 1.7 Proteins                                |

## UNIT 2

### Cells

~14–16	Class Periods	10–13%	AP Exam Weighting
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- |   |   |
|---|---|
| 1 | 2.1 Cell Structure and Function           |
| 2 | 2.2 Cell Size                             |
| 2 | 2.3 Plasma Membrane                       |
| 5 | 2.4 Membrane Permeability                 |
| 3 | 2.5 Membrane Transport                    |
| 6 | 2.6 Facilitated Diffusion                 |
| 4 | 2.7 Tonicity and Osmoregulation           |
| 1 | 2.8 Mechanisms of Transport               |
| 6 | 2.9 Cell Compartmentalization             |
| 6 | 2.10 Origins of Cell Compartmentalization |

## UNIT 3

### Cellular Energetics

~12–14	Class Periods	12–16%	AP Exam Weighting
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- |   |  |
|---|--|
| 1 | 3.1 Enzymes                                  |
| 6 | 3.2 Environmental Impacts on Enzyme Function |
| 6 | 3.3 Cellular Energy                          |
| 6 | 3.4 Photosynthesis                           |
| 4 | 3.5 Cellular Respiration                     |

## UNIT 4

### Cell Communication and Cell Cycle

~12–14	Class Periods	10–15%	AP Exam Weighting
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- |   |   |
|---|---|
| 1 | 4.1 Cell Communication                  |
| 1 | 4.2 Introduction to Signal Transduction |
| 6 | 4.3 Signal Transduction Pathways        |
| 6 | 4.4 Feedback                            |
| 4 | 4.5 Cell Cycle                          |
| 6 | 4.6 Regulation of Cell Cycle            |

## UNIT 5

### Heredity

~8–10	Class Periods	8–11%	AP Exam Weighting
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- |   |  |
|---|--|
| 1 | 5.1 Meiosis                            |
| 3 | 5.2 Meiosis and Genetic Diversity      |
| 5 | 5.3 Mendelian Genetics                 |
| 5 | 5.4 Non-Mendelian Genetics             |
| 1 | 5.5 Environmental Effects on Phenotype |

## UNIT 6

### Gene Expression and Regulation

~18–20	Class Periods	12–16%	AP Exam Weighting
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- |   |   |
|---|---|
| 1 | 6.1 DNA and RNA Structure                   |
| 2 | 6.2 DNA Replication                         |
| 2 | 6.3 Transcription and RNA Processing        |
| 2 | 6.4 Translation                             |
| 6 | 6.5 Regulation of Gene Expression           |
| 6 | 6.6 Gene Expression and Cell Specialization |
| 2 | 6.7 Mutations                               |
| 6 | 6.8 Biotechnology                           |

## UNIT 7

### Natural Selection

~19–21	Class Periods	13–20%	AP Exam Weighting
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- |   |                                       |
|---|---------------------------------------|
| 2 | 7.1 Introduction to Natural Selection |
| 1 | 7.2 Natural Selection                 |
| 4 | 7.3 Artificial Selection              |
| 3 | 7.4 Population Genetics               |
| 1 | 7.5 Hardy–Weinberg Equilibrium        |
| 4 | 7.6 Evidence of Evolution             |
| 6 | 7.7 Common Ancestry                   |
| 3 | 7.8 Continuing Evolution              |
| 2 | 7.9 Phylogeny                         |
| 2 | 7.10 Speciation                       |
| 6 | 7.11 Variations in Populations        |
| 3 | 7.12 Origins of Life on Earth         |

## UNIT 8

### Ecology

~19–21	Class Periods	10–15%	AP Exam Weighting
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- |   |                                      |
|---|--------------------------------------|
| 3 | 8.1 Responses to the Environment     |
| 6 | 8.2 Energy Flow Through Ecosystems   |
| 4 | 8.3 Population Ecology               |
| 5 | 8.4 Effect of Density on Populations |
| 5 | 8.5 Community Ecology                |
| 6 | 8.6 Biodiversity                     |
| 5 | 8.7 Disruptions in Ecosystems        |

#### Progress Check 1

**Multiple-Choice:** ~24 questions  
**Free-Response:** 2 questions

- Conceptual Analysis (partial)
- Analyze Model or Visual Representation (partial)

#### Progress Check 2

**Multiple-Choice:** ~33 questions (2 parts)  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results (partial)
- Analyze Model or Visual Representation (partial)

#### Progress Check 3

**Multiple-Choice:** ~19 questions  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results with Graphing (partial)
- Scientific Investigation (partial)

#### Progress Check 4

**Multiple-Choice:** ~24 questions  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results (partial)
- Analyze Data

#### Progress Check 5

**Multiple-Choice:** ~23 questions  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results with Graphing
- Conceptual Analysis

#### Progress Check 6

**Multiple-Choice:** ~25 questions  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results
- Analyze Model or Visual Representation

#### Progress Check 7

**Multiple-Choice:** ~48 questions (2 parts)  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results with Graphing
- Analyze Data

#### Progress Check 8

**Multiple-Choice:** ~24 questions  
**Free-Response:** 2 questions

- Interpreting and Evaluating Experimental Results with Graphing
- Scientific Investigation

**NOTE:** Partial versions of the free-response questions are provided to prepare students for more complex, full questions that they will encounter on the AP Exam.