

## Syllabus, Summer 2006 AP Biology: Selected Topics

**Instructor:** Judith Nuño  
[apnuno@gmail.com](mailto:apnuno@gmail.com)

**Course Description:** The AP Biology course covers selected topics typically found in a first-year college biology course and advances the student's understanding of concepts normally covered in high school biology. Major themes include evolution, the chemical basis of life, energy transfer, metabolism of cells, genetic community, homeostasis in animals and plants, structure and function, and how populations evolve. Diversity of the earth's beings from microorganisms to plants and animals and the continuity of life through heredity and developmental processes are emphasized. The course is lecture based and gives the student a solid understanding of the concepts included on the Advanced Placement (AP) Biology exam. The teacher is the guide for this course but the student is the learner and will learn chemistry by actively engaging with the readings, videos, animations, activities, and resources in the online textbook. Student knowledge will be assessed by completion of weekly Homework, weekly multiple choice tests, free response writing, and other activities.

### Course Overview

Week	Chapters	Due Dates Chapter Homework	Due Dates Chapter Tests
1	<b>Diagnostic Exam</b> <i>The Diagnostic Exam is not graded. It assesses what you know about biology before you start the course!</i>	NA	June 14
	<b>Chapter 1: Evolution</b>	June 15	June 16
2	<b>Chapter 2: Inorganic and Organic Chemistry</b>	June 22	June 23
3	<b>Chapter 3: Cell Biology</b>	June 29	June 30
4	<b>Chapter 4: Respiration</b> <b>Chapter 5: Photosynthesis</b>	July 6	July 7
5	<b>Chapter 6: Molecular Genetics</b> <b>Chapter 7: Biotechnology</b>	July 13	July 14
6	<b>Chapter 8: Cell Reproduction</b>  <i>Review Chapters 1–7 as well as 8 for Midterm Exam</i>	July 20	July 21 Midterm Exam Chapters 1–8
7	<b>Chapter 9: Mendelian Genetics and Mutation</b> <b>Chapter 10: Population Genetics and Mutation</b>	July 27	July 28
8	<b>Chapter 11: The Evolution of Life on Earth</b>	August 3	August 4
9	<b>Chapter 12: Animal Systems and Homeostasis</b>	August 10	August 11
10	<b>Chapter 13: Plant Systems and Homeostasis</b>  <i>Begin Review for Final Exam</i>	August 17	August 18
11	<b>Chapter 14: Ecology</b> <i>Continue Reviewing for Final Exam</i>	August 24	August 25
12	<b>Virtual Lab Activities (Lab Bench)</b> <a href="http://www.phschool.com/science/biology_place/labbench/index.html">http://www.phschool.com/science/biology_place/labbench/index.html</a>	August 31	Lab questions will be included on Final Exam
<b>Final Exam</b>		<b>Sept 1</b>	

*Tests are closed note/closed book*



## Extended Course Schedule

Week	Chapters	Due Dates Chapter Homework	Due Dates Chapter Tests
	<p><b>Diagnostic Exam</b>  <i>The Diagnostic Exam is not graded.</i>  <i>It assesses what you know about biology before you start the course!</i></p>	NA	June 14
1	<p><b>Chapter 1: Evolution</b>            1.1 Unity and Diversity of Life on Earth            1.2 Early Perspectives in Science            1.3 An Introduction to Evolution            1.4 Evolution: The Theory of Natural Selection            1.5 Fossils and Evolution            1.6 Human Evolution            1.7 Evidence for Evolution            1.8 Species Concepts            1.9 Examples of Artificial and Natural Selection            1.10 The Origin of Life            1.11 Classifying Life</p>	June 15	June 16
2	<p><b>Chapter 2: Inorganic and Organic Chemistry</b>            2.1 An Introduction to Atoms            2.2 Atoms and Bonding            2.3 Properties of Water            2.4 Carbon Chemistry            2.5 Carbohydrates            2.6 Lipids and Nucleic Acids            2.7 Proteins            2.8 Enzymes            2.9 Enzyme Action</p>	June 22	June 23
3	<p><b>Chapter 3: Cell Biology</b>            3.1 An Introduction to Cell Biology            3.2 Membrane-Bound Organelles            3.3 The Cytoskeleton            3.4 The Plasma Membrane            3.5 Cell Transport            3.6 Tools for Cell Biology            3.7 The Evolution of Metabolic Functions</p>	June 29	June 30
4	<p><b>Chapter 4: Respiration</b>            4.1 An Introduction to Respiration            4.2 Glycolysis and Fermentation            4.3 Aerobic Respiration            4.4 The Electron Transport Chain &amp; Oxidative Phosphorylation  <b>Chapter 5: Photosynthesis</b>            5.1 Discovering Photosynthesis            5.2 Adaptations for Photosynthesis            5.3 The Light Reactions            5.4 The Dark Reactions            5.5 Photorespiration</p>	July 6	July 7

*Tests are closed note/closed book*



<b>Week</b>	<b>Chapters</b>	<b>Due Dates Chapter Homework</b>	<b>Due Dates Chapter Tests</b>
<b>5</b>	<p><b>Chapter 6: Molecular Genetics</b></p> <p>6.1 Discovering DNA 6.2 DNA Structure Revealed 6.3 Introduction to DNA Replication 6.4 Events of DNA Replication 6.5 Transcription 6.6 Translation 6.7 Protein Synthesis Review 6.8 The <i>lac</i> Operon 6.9 Eukaryotic Genomic Organization 6.10 Controlling Protein Synthesis in Eukaryotes</p> <p><b>Chapter 7: Biotechnology</b></p> <p>7.1 Plasmids and Gene Cloning 7.2 Techniques in Biotechnology 7.3 More Techniques in Biotechnology 7.4 Human Genome Project</p>	<b>July 13</b>	<b>July 14</b>
<b>6</b>	<p><b>Chapter 8: Cell Reproduction</b></p> <p>8.1 An Introduction to the Cell Cycle and Mitosis 8.2 Regulating Mitosis 8.3 Meiosis 8.4 Understanding Meiosis</p> <p><b>Review Chapters 1–7 and 8 for Midterm Exam</b></p>	<b>July 20</b>	<b>July 21</b>  <b>Midterm Exam Chapters 1–8</b>
<b>7</b>	<p><b>Chapter 9: Mendelian Genetics and Mutation</b></p> <p>9.1 Gregor Mendel 9.2 The Laws of Mendelian Inheritance 9.3 Segregation and Independent Assortment 9.4 Laws of Probability 9.5 Genetic Dominance 9.6 Epistasis 9.7 Inheritance Patterns 9.8 Linked Genes and Genetic Mapping 9.9 Sex Linkage and Pedigree Charts 9.10 Problems in Heredity 9.11 Genetic Mutation</p> <p><b>Chapter 10: Population Genetics and Mutation</b></p> <p>10.1 The Hardy-Weinberg Theory 10.2 Departing From Hardy-Weinberg Equilibrium 10.3 Variations in Populations and Modes of Selection 10.4 Speciation 10.5 Evolution</p>	<b>July 27</b>	<b>July 28</b>
<b>8</b>	<p><b>Chapter 11: The Evolution of Life on Earth</b></p> <p>11.1 Classifying Earth's Organisms 11.2 Domain Archaea 11.3 Domain Bacteria 11.4 Protists and the Origin of the Eukaryota 11.5 The Colonization of Land by Plants 11.6 Alternation of Generations: Mosses, Ferns, and Gymnosperms 11.7 Angiosperms 11.8 Fungi 11.9 Evolution of the Animal Kingdom 11.10 Invertebrates 11.11 Deuterostomes 11.12 Chordate Development 11.13 The Cellular and Molecular Basis of Development 11.14 Viruses and Prions</p>	<b>August 3</b>	<b>August 4</b>

*Tests are closed note/closed book*



<b>Week</b>	<b>Chapters</b>	<b>Due Dates Chapter Homework</b>	<b>Due Dates Chapter Tests</b>
<b>9</b>	<b>Chapter 12: Animal Systems and Homeostasis</b> 12.1 Introduction to Animal Systems and Homeostasis 12.2 The Digestive System 12.3 Gas Exchange and Transport Systems 12.4 Circulation 12.5 Blood Pressure and Clotting 12.6 Human Excretion 12.7 The Immune System: An Introduction 12.8 The Immune System Continued 12.9 HIV and the Immune System 12.10 The Endocrine System 12.11 The Ovarian and Uterine Cycles 12.12 The Nervous System 12.13 The Nerve Impulse 12.14 Motor Mechanisms 12.15 Sensory Reception	<b>August 10</b>	<b>August 11</b>
<b>10</b>	<b>Chapter 13: Plant Systems and Homeostasis</b> 13.1 Plant Development 13.2 Plant Hormones 13.3 Photoperiodism 13.4 Plant Transport  <b>Begin Review for Final Exam</b>	<b>August 17</b>	<b>August 18</b>
<b>11</b>	<b>Chapter 14: Ecology</b> 14.1 Introduction to Ecology 14.2 Biomes 14.3 Animal Behavior 14.4 Competitive and Courtship Behaviors 14.5 Population Ecology 14.6 Community Ecology: Interspecific Interactions 14.7 Community Ecology: Succession 14.8 Community Ecology: Species Diversity 14.9 Energy Flow in an Ecosystem 14.10 Chemical Cycling in the Ecosystem 14.11 Human Effect on the Ecosystem  <b>Continue Reviewing for Final Exam</b>	<b>August 24</b>	<b>August 25</b>
<b>12</b>	<b>Virtual Lab Activities (Lab Bench)</b> <a href="http://www.phschool.com/science/biology_place/labbench/index.html">http://www.phschool.com/science/biology_place/labbench/index.html</a>  Lab 1: Diffusion and Osmosis      Lab 7: Genetics of Organisms Lab 2: Enzyme Catalysis          Lab 8: Population Genetics Lab 3: Mitosis and Meiosis        Lab 9: Transpiration Lab 4: Plant Pigments &          Lab 10: Circulatory Physiology Photosynthesis                      Lab 11: Animal Behavior Lab 5: Cell Respiration            Lab 12: Dissolved Oxygen Lab 6: Molecular Biology	<b>31</b>	Lab questions will be included on Final Exam
<b>Final Exam</b>		<b>Sept 1</b>	

*Tests are closed note/closed book*

