



**2020 AP[®] Biology Course Framework Topic Alignment to
Biology for the AP[®] Course, 1st edition
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2020 CF Topic Number	2020 Course Framework Topic Title	<i>Biology for the AP[®] Course 1e</i> Unit/Module
Unit 1: Chemistry of Life (Weight: 8-11%)		
1.1	Structure of Water and Hydrogen Bonding	Unit 1, Module 2 ¹
1.2	Elements of Life	Unit 1, Module 1, Tutorial 1
1.3	Introduction to Biological Macromolecules	Unit 1, Modules 3-5
1.4	Properties of Biological Macromolecules	Unit 1, Modules 3-5
1.5	Structure and Function of Biological Macromolecules	Unit 1, Modules 3-5
1.6	Nucleic Acids	Unit 1, Module 5
Unit 2: Cell Structure and Function (Weight: 10–13%)		
2.1	Cell Structure: Subcellular Components	Unit 2, Module 7 ²
2.2	Cell Structure and Function	Unit 2, Module 6
2.3	Cell Size	Unit 2, Module 8
2.4	Plasma Membranes	Unit 2, Module 9
2.5	Membrane Permeability	Unit 2, Module 9
2.6	Membrane Transport	Unit 2, Module 10
2.7	Facilitated Diffusion	Unit 2, Module 10
2.8	Tonicity and Osmoregulation	Unit 2, Module 11
2.9	Mechanics of Transport	Unit 2, Module 10 ³
2.10	Cell Compartmentalization	Unit 2, Module 7 ²
2.11	Origins of Cell Compartmentalization	Unit 2, Module 12
Unit 3: Cellular Energetics (Weight: 12–16%)		
3.1	Enzyme Structure	Unit 3, Module 14 ⁴
3.2	Enzyme Catalysis	Unit 3, Module 14



3.3	Environmental Impacts on Enzyme Function	Unit 3, Module 14
3.4	Cellular Energy	Unit 3, Module 13 ⁴
3.5	Photosynthesis	Unit 3, Modules 15-16
3.6	Cellular Respiration	Unit 3, Modules 17-18
3.7	Fitness	Unit 3, Module 19
Unit 4: Cell Communication and Cell Cycle (Weight: 10–15%)		
4.1	Cell Communication	Unit 4, Modules 20 and 21
4.2	Introduction to Signal Transduction	Unit 4, Module 21
4.3	Signal Transduction	Unit 4, Module 21
4.4	Changes in Signal Transduction Pathways	Unit 4, Module 22
4.5	Feedback	Unit 4, Module 23
4.6	Cell Cycle	Unit 4, Module 24
4.7	Regulation of Cell Cycle	Unit 4, Module 25
Unit 5: Heredity (Weight: 8–11%)		
5.1	Meiosis	Unit 5, Module 26
5.2	Meiosis and Genetic Diversity	Unit 5, Module 26
5.3	Mendelian Genetics	Unit 5, Module 27, Tutorial 2
5.4	Non-Mendelian Genetics	Unit 5, Module 28
5.5	Environmental Effects on Phenotype	Unit 5, Module 29
5.6	Chromosomal Inheritance	Unit 5, Module 30
Unit 6: Gene Expression and Regulation (Weight: 12–16%)		
6.1	DNA and RNA Structure	Unit 6, Module 31
6.2	Replication	Unit 6, Module 32
6.3	Transcription and RNA Processing	Unit 6, Module 33 ⁵
6.4	Translation	Unit 6, Module 34
6.5	Regulation of Gene Expression	Unit 6, Module 35
6.6	Gene Expression and Cell Specialization	Unit 6, Module 36
6.7	Mutations	Unit 6, Module 37
6.8	Biotechnology	Unit 6, Module 38
Unit 7: Natural Selection (Weight: 13–20%)		
7.1	Introduction to Natural Selection	Unit 7, Module 40
7.2	Natural Selection	Unit 7, Module 41
7.3	Artificial Selection	Unit 7, Module 41
7.4	Population Genetics	Unit 7, Module 42
7.5	Hardy-Weinberg Equilibrium	Unit 7, Module 43
7.6	Evidence of Evolution	Unit 7, Module 44
7.7	Common Ancestry	Unit 7, Module 44
7.8	Continuing Evolution	Unit 7, Module 45
7.9	Phylogeny	Unit 7, Module 46
7.10	Speciation	Unit 7, Module 47 ⁶



7.11	Extinction	Unit 7, Module 48
7.12	Variations in Populations	Unit 7, Module 49
7.13	Origin of Life on Earth	Unit 7, Module 50
Unit 8: Ecology (Weight: 10-15%)		
8.1	Responses to the Environment	Unit 8, Module 51
8.2	Energy Flow Through Ecosystems	Unit 8, Module 52
8.3	Population Ecology	Unit 8, Module 53, Tutorial 3
8.4	Effect of Density of Populations	Unit 8, Module 54
8.5	Community Ecology	Unit 8, Module 55
8.6	Biodiversity	Unit 8, Module 56
8.7	Disruptions to Ecosystems	Unit 8, Module 57

¹ We discuss the basic chemistry of molecular bonding in Module 1 as a foundation for the specific properties of hydrogen bonding in Module 2.

² We begin with an overview of the endomembrane system to establish a basic description of cells before discussing the specific organelles.

³ We cover transport mechanisms before the details of tonicity and osmoregulation to establish the principles of membrane transport as a foundation for the details at the cellular level.

⁴ We describe energy basics and cellular energy at the beginning of Unit 3 before going into the details of cell metabolism because the detailed discussions need that foundation.

⁵ Reverse transcriptase is covered in Unit 6, Module 39, Viruses.

⁶ **Tutorial 4**, at the end of the book, is a thorough review of reading and making graphs. As it is an undercurrent throughout the course, we recommend introducing it to your students at the beginning of the course and referring to it throughout.

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