

# Biology 1 Pacing Guide

UNIT	COMPETENCY/ OBJECTIVE	CONTENT/MAJOR TOPICS
Inquiry	1a 1b 1c 1d 1e 1f 1g	<ul style="list-style-type: none"> <li>• Lab safety</li> <li>• Safety symbols</li> <li>• Lab equipment (thermometers, TBB, graduated cylinder, etc.)</li> <li>• Scientific Method</li> <li>• Independent vs. Independent variables</li> <li>• Analyzing Scientific Experiments (graphs, charts, etc.)</li> <li>• Metric System</li> <li>• Microscopes</li> </ul>
Chemistry	2a 2b 2c 2d 2e	<ul style="list-style-type: none"> <li>• Atoms</li> <li>• Periodic Table</li> <li>• Covalent, Ionic, and Hydrogen Bonds</li> <li>• Properties of Water</li> <li>• pH</li> <li>• Chemical Reactions</li> <li>• Organic compounds</li> <li>• Enzymes</li> </ul> <p style="text-align: right;">END 1<sup>ST</sup> 9 WEEKS</p>
Cell Structure and Function	2f 2g 4a 4c	<ul style="list-style-type: none"> <li>• Prokaryotic vs. Eukaryotic cells</li> <li>• Plant vs. Animal Cells</li> <li>• Organelle structure and function</li> <li>• Cellular Organization</li> <li>• Cellular transport; active vs. passive</li> <li>• ATP structure and function</li> <li>• Cellular Respiration</li> <li>• Photosynthesis</li> </ul>
Cellular Division and Reproduction	4b 5c 5d 6a 6d	<ul style="list-style-type: none"> <li>• The cell cycle</li> <li>• Mitosis</li> <li>• Meiosis</li> <li>• Types of Reproduction</li> <li>• Compare/contrast sexual vs. asexual reproduction</li> <li>• Compare/contrast mitosis vs. meiosis</li> <li>• Significance of crossing over and nondisjunction</li> <li>• Mutations during mitosis</li> <li>• Mutations during meiosis</li> <li>• Karyotypes</li> </ul>
DNA and RNA	5a 5c 5d	<ul style="list-style-type: none"> <li>• Structure of DNA</li> <li>• Structure of RNA</li> <li>• Chromosomes, genes, and gene regulation</li> <li>• Types of RNA</li> <li>• Compare/contrast DNA vs. RNA</li> <li>• Replication, Transcription, and Translation</li> <li>• mRNA codon chart</li> <li>• Mutations</li> <li>• Genetic disorders</li> </ul>

**END SEMESTER 1**

Genetics	5b 5d	<ul style="list-style-type: none"> <li>• Mendelian Genetics</li> <li>• Law of Dominance</li> <li>• Law of Segregation</li> <li>• Monohybrid Punnett squares</li> <li>• Dihybrid Punnett squares</li> <li>• Human Autosomal and Genetic Diseases (Tay Sachs, PKU, etc.)</li> <li>• Incomplete dominance</li> <li>• Codominance</li> <li>• Multiple Alleles</li> <li>• Linked and sex-linked genes</li> <li>• Pedigrees</li> </ul>
Evolution	6b 6c 6d 6e	<ul style="list-style-type: none"> <li>• Spontaneous generation and biogenesis</li> <li>• Critique data used by Redi, Needham, Spallanzani, Pasteur</li> <li>• Chemical evolution</li> <li>• Organic evolution</li> <li>• Darwin and the role of natural selection</li> <li>• Summarize contributions made by Malthus, Wallace, Lamark, and Lyell to the development of the theory of evolution</li> <li>• Mechanisms and application of speciation</li> <li>• The evolution of cells</li> </ul>
Taxonomy	6a	<ul style="list-style-type: none"> <li>• Classification</li> <li>• Evolutionary relationships</li> <li>• Six Kingdoms</li> <li>• Nomenclature</li> </ul> <p style="text-align: right;">END 3<sup>RD</sup> 9 WEEKS</p>
Plants & Animals	4d	<ul style="list-style-type: none"> <li>• Characteristics of Plants</li> <li>• Structure and function of plants</li> <li>• Vascular vs. nonvascular</li> <li>• Specialized cells and tissues</li> <li>• Plant adaptations</li> <li>• Reproduction</li> <li>• Characteristics of animals</li> <li>• Animal adaptations</li> </ul>
Biogeochemical Cycles & Ecology	3b 6d	<ul style="list-style-type: none"> <li>• The Water Cycle</li> <li>• The Carbon Cycle</li> <li>• The Nitrogen Cycle</li> <li>• Ecological Relationships (cooperation, predation, parasitism, commensalism, symbiosis, mutualism)</li> <li>• Energy flow (energy pyramids, producers, herbivores, carnivores, decomposers)</li> </ul>
Biomes & Ecosystems	3a 3b 3c	<ul style="list-style-type: none"> <li>• Biomes (Tundra, Desert, Taiga, Temperate Forest, Tropical Rainforest, Grassland, Aquatic)</li> <li>• Population factors (carrying capacity, logistic growth, limiting factors, density dependent, density independent, exponential growth)</li> <li>• Population Interdependence</li> <li>• Ecological Succession</li> </ul>

## State Test Review (min. 3 weeks to prepare)