

Course at a Glance

| Unit 1 Chemistry of Life (6 days / 8-11%) | | |
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| | | Student version |
| 1.1 Structure of Water and Hydrogen Bonding | 3.1, 3.2 | 3.1, 3.2 |
| 1.2 Elements of Life | 4.2, 4.3 | 4.2, 4.3 |
| 1.3 Introduction to Biological Macromolecules | 5.1, 5.2, 5.3, 5.4 | 5.1, 5.2, 5.3, 5.4 |
| 1.4 Properties of Biological Macromolecules | | |
| 1.5 Structure and Function of Biological Macromolecules | | |
| 1.6 Nucleic Acids | 5.5 | 5.5 |
| Unit 2 Cell Structure and Function (7 days / 10-13%) | | |
| 2.1 Cell Structure: Subcellular Components | 6.4, 6.5 | 6.4, 6.5 |
| 2.2 Cell Structure and Function | | |
| 2.3 Cell Size | 6.2 | 6.2 |
| 2.4 Plasma Membranes | 7.1 | 7.1 |
| 2.5 Membrane Permeability | 7.2 | 7.2 |
| 2.6 Membrane Transport | 7.3, 7.4, 7.5 | 7.3, 7.4, 7.5 |
| 2.7 Facilitated Diffusion | | |
| 2.8 Tonicity and Osmoregulation | | |
| 2.9 Mechanisms of Transport | | |
| 2.10 Cell Compartmentalization | 6.2, 6.3, 6.4, 6.5 | 6.2, 6.3, 6.4, 6.5 |
| 2.11 Origins of Cell Compartmentalization | 6.2, 6.5, 25.3 | 6.2, 6.5, 26.3, 26.4, 26.5 |
| Unit 3 Cellular Energetics (8 days / 12-16%) | | |
| 3.1 Enzyme Structure | 8.4, 8.5 | 8.4, 8.5 |
| 3.2 Enzyme Catalysis | | |
| 3.3 Environmental Impacts on Enzyme Function | | |
| 3.4 Cellular Energy | 8.1, 8.2, 8.3, 9.1 | 8.1, 8.2, 8.3, 9.1 |
| 3.5 Photosynthesis | 10.1, 10.2, 10.3 | 10.1, 10.2, 10.3 |
| 3.6 Cellular Respiration | 9.2, 9.3, 9.4, 9.5, 9.6 | 9.2, 9.3, 9.4, 9.5, 9.6 |
| 3.7 Fitness | | |
| Unit 4 Cell Communication and Cell Cycle (7 days / 10-15%) | | |
| 4.1 Cell Communication | 11.1 | 11.1 |
| 4.2 Introduction to Signal Transduction | 11.2, 11.3, 11.4 | 11.2, 11.3, 11.4 |
| 4.3 Signal Transduction | | |
| 4.4 Changes in Signal Transduction Pathways | | |
| 4.5 Feedback | 40.1, 40.2 | 40.2, 40.4 |
| 4.6 Cell Cycle | 12.1, 12.2 | 12.1, 12.2 |
| 4.7 Regulation of Cell Cycle | 12.3 | 12.3 |

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| Unit 5 Heredity (6 days / 8-11%) | | |
| 5.1 Meiosis | 13.2, 13.3 | 13.2, 13.3 |
| 5.2 Meiosis and Genetic Diversity | 13.4 | 13.4 |
| 5.3 Mendelian Genetics | 14.1, 14.2 | 14.1, 14.2 |
| 5.4 Non-Mendelian Genetics | 14.3 | 14.3 |
| 5.5 Environmental Effects on Phenotype | | |
| 5.6 Chromosomal Inheritance | 15.1, 15.2, 15.4, 15.5 | 15.1, 15.3, 15.4, 15.5 |
| Unit 6 Gene Expression and Regulation (8 days / 12-16%) | | |
| 6.1 DNA and RNA Structure | 5.5, 16.1 | 5.5, 16.1 |
| 6.2 Replication | 16.2 | 16.2 |
| 6.3 Transcription and RNA Processing | 17.1, 17.2, 17.3 | 17.1, 17.2, 17.3 |
| 6.4 Translation | 17.4 | 17.4 |
| 6.5 Regulation of Gene Expression | 18.1, 18.2, 18.3 | 18.4, 19.2 |
| 6.6 Gene Expression and Cell Specialization | 18.4 | 21.1, 21.2, 21.3 |
| 6.7 Mutations | 17.5 | 17.7 |
| 6.8 Biotechnology | 20.1, 20.2, | 20.1, 20.2, 20.3, 20.4 |
| Unit 7 Natural Selection (10 days / 13-20%) | | |
| 7.1 Introduction to Natural Selection | 22.2 | 22.2 |
| 7.2 Natural Selection | | |
| 7.3 Artificial Selection | | |
| 7.4 Population Genetics | 23.1, | 23.2 |
| 7.5 Hardy-Weinberg Equilibrium | 23.1, 23.2, 23.3, 23.4 | 23.1, 23.2, 23.3, 23.4 |
| 7.6 Evidence of Evolution | 22.3 | 22.3 |
| 7.7 Common Ancestry | | |
| 7.8 Continuing Evolution | | |
| 7.9 Phylogeny | 26.1, 26.2, 26.3, 26.4, 26.5, 26.6 | 25.1, 25.2, 25.3, 25.4, 25.5 |
| 7.10 Speciation | 24.1, 24.2 | 24.1, 24.2 |
| 7.11 Extinction | 25.4, 56.1, 56.2 | 26.2, 55.1, 55.2 |
| 7.12 Variations in Populations | Various already included | |
| 7.13 Origin of Life on Earth | 4.1, 25.1, | 4.1, 26.1 |
| Unit 8 Ecology (7 days / 10-15%) | | |
| 8.1 Responses to the Environment | 51.1, 51.2, 51.3, 51.4 | 51.1, 51.3, 51.4, |
| 8.2 Energy Flow Through Ecosystems | 40.3, 40.4, 55.1, 55.2, 55.3 | 40.3, 40.5, 54.1, 54.2, 54.3 |
| 8.3 Population Ecology | 53.1, 53.2, 53.3 | 52.1, 52.3, 52.4 |
| 8.4 Effect of Density of Populations | 53.5 | 52.5 |
| 8.5 Community Ecology | 54.1, 54.2 | 53.1, 53.2 |
| 8.6 Biodiversity | | |
| 8.7 Disruptions to Ecosystems | 54.3, 54.4 | 53.3, 53.4 |