

Biology – Grade 9-10

PACING SCHEDULE

| STANDARDS ADDRESSED | QUARTER 1: THE HISTORY AND NATURE OF SCIENCE, ECOLOGY AND POPULATIONS (Adjust Time Lines As Needed) | APPROXIMATE TIME REQUIRED |
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| I.A.B.C.D.All | UNIT I - Overview of Content, Skills and Processes of Science, and Introduction to Biology ✎ Investigation A - The nature of Science; What is Life: <ul style="list-style-type: none"> • Define terms • Technology, criteria • Vocabulary • Ethics, Branches of science • Review math, literacy, lab, affective, inquiry skills • Microscope review • Review chemistry • Water | Incorporate throughout this quarter and throughout the rest of the year. |
| IV.C.2, 3, 4; IV.F.1, 5 IV.F.2, 3, 4, 5 IV.C.1, 2, 4; IV.F.1 | UNIT II – Ecosystems and Ecology ✎ Investigation A - Ecosystems ✎ Investigation B - Energy flow: transfer of energy, entropy, photosynthesis, respiration, trophic levels ✎ Investigation C - Adaptations and biological cycles | 4 weeks |
| IV.C.1, 4 IV.C.2; IV.F.2 | UNIT III – Populations ✎ Investigation A - Human population, carrying capacity, limiting factors ✎ Investigation B - Population change | 2 weeks |
| IV.A.5 IV.A.6 | UNIT IV - Cell Chemistry ✎ Investigation A - Cell metabolism and synthesis; enzymes; organic molecules; macromolecules ✎ Investigation B - Photosynthesis and cell respiration | 3 weeks |
| I.B.1 | UNIT V – Design and Conduct an Original Experiment | Anytime throughout the course, and at least once/year. |

| STANDARDS ADDRESSED | QUARTER 2: CELLS, HEREDITY AND GENETICS, AND DNA | APPROXIMATE TIME REQUIRED |
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| IV.A.1 IV.A.2, 3, 7 IV.A.4 | UNIT I - Cells and Cell Membranes ✎ Investigation A – Intro to Cells: Basic cell theory, prokaryotic and eukaryotic cells ✎ Investigation B - Cell Structure and Function; organelles; cell cycle and mitosis ✎ Investigation C - Cell comparison: plant, animal, bacteria, virus ✎ Investigation D - Cell Transport, Diffusion and Osmosis, concentration gradient | 3 weeks |

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| IV.D.4, 6, 7 IV.D.1, 2, 3 | UNIT II - Heredity and Genetics <ul style="list-style-type: none"> ➤ Investigation A – Genes, chromosomes and gene expression ➤ Investigation B - Mendel's laws: traits, crosses, pedigrees | 3 weeks |
| IV.D.1, 2, 3 IV.D.4, 5 | UNIT III - Reproductive Biology <ul style="list-style-type: none"> ➤ Investigation A – DNA: protein synthesis, transcription, translation, structure ➤ Investigation B - Fertilization, recombination, meiosis, sexual/asexual, human reproduction | 2 weeks |

| STANDARDS ADDRESSED | QUARTER 3: EVOLUTION AND COMPARATIVE ANATOMY | APPROXIMATE TIME REQUIRED |
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| IV.B.3; IV.C.3; IV.E.1, 2, 3, 5 IV.B.3; IV.C.2; IV.E.1, 3, 4 | UNIT I – Evolutionary Theory <ul style="list-style-type: none"> ➤ Investigation A – Evolution: History, theory, mechanisms, evidence, fossils, and human history ➤ Investigation B - Classification, speciation, common ancestry | 4 weeks |
| IV.B.1; IV.G.2 IV.B.1; IV.G.2 | UNIT II – Comparative Anatomy <ul style="list-style-type: none"> ➤ Investigation A - Compare four systems: circulatory, respiratory, digestive and nervous systems of human and other organisms ➤ Investigation B - Methods of obtaining, and eliminating matter; transferring and releasing Energy; nutrition; plant nutrition | 5 weeks |

| STANDARDS ADDRESSED | QUARTER 4: HOMEOSTASIS, BEHAVIOR and HUMAN IMPACT | APPROXIMATE TIME REQUIRED |
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| IV.B.1; IV.G.2 | UNIT I - Homeostasis <ul style="list-style-type: none"> ➤ Investigation A - Integration of organ systems: balance, function, integration | 1 week |
| IV.G.1 IV.B.2 | UNIT II – Anatomy of the Nervous System and Behavior <ul style="list-style-type: none"> ➤ Investigation A - Physiology of the Human Brain and Senses ➤ Investigation B - Behavior comparison across phyla; plants; tropisms | 3 weeks |
| IV.C.4 | UNIT III – Human Impact <ul style="list-style-type: none"> ➤ Investigation A - Human impact: conservation, pollution, trade-offs, invasive species, resource management | 2 weeks |
| IV.D.1, 2, 3 I.C.2, 3 | UNIT IV – Biology of the Future <ul style="list-style-type: none"> ➤ Investigation A – Biotechnology, Genetic Engineering ➤ Technology | 2 weeks |