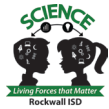




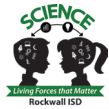
Rockwall ISD Biology on-level Year-at-a-Glance



	Term 1	Term 2	Term 3	Term 4
Focus TEKS ESSENTIAL	<u>Unit 1</u> 9A <u>Unit 2</u> 4A, 4B , 4C <u>Unit 3</u> 9B , 9C	<u>Unit 4</u> 6A , 6B, 6C , 6D, 6E <u>Unit 5</u> 5A , 5B, 5C <u>Unit 6</u> 6F , 6G	<u>Unit 7</u> 7A , 7B, 7C , 7D, 7E, 7F <u>Unit 8</u> 8A, 8B, 8C <u>Unit 9</u> 10B , 10C	<u>Unit 10</u> 10A , 10C <u>Unit 11</u> 11A, 11B, 12A, 12B, 12C, 12D, 12E
Topic Focus	<u>Unit 1</u> Biomolecules + wet labs <u>Unit 2</u> Cells + Viruses <u>Unit 3</u> Energetics + Enzymes	<u>Unit 4</u> DNA, Protein Synthesis + Mutations <u>Unit 5</u> Cell Cycle <u>Unit 6</u> Genetics + Meiosis	<u>Unit 7</u> Evolution <u>Unit 8</u> Taxonomy <u>Unit 9</u> Plant Systems	<u>Unit 10</u> Animal Systems <u>Unit 11</u> Ecology
Resources	<u>Unit 1</u> Chapter 2 <u>Unit 2</u> Chapter 3 <u>Unit 3</u> Chapter 4	<u>Unit 4</u> Chapter 8 <u>Unit 5</u> Chapter 5 <u>Unit 6</u> Chapter 6	<u>Unit 7</u> Chapter 10 <u>Unit 8</u> Chapter 17 <u>Unit 9</u> Chapter 21	<u>Unit 10</u> Chapter 28 <u>Unit 11</u> Chapter 14
Key Concepts	Unit 1 <ul style="list-style-type: none">• Compare & contrast the function of the 4 major organic compounds.• Function of lipids in cell membrane• Recognize that genetic material is found in all living things.• Understand the role of proteins• Recognize monomers and polymers of all 4 biomolecules• Recognize basic shapes of all 4 biomolecules Unit 2 <ul style="list-style-type: none">• Compare and contrast prokaryotic and eukaryotic cell organelles	Unit 4 <ul style="list-style-type: none">• Structure of a nucleotide (including hydrogen bond)• Sequence of nitrogenous bases• Historical contributions: Griffith, Avery, Hershey & Chase, Watson & Crick, Chargaff, and Franklin.• DNA is the hereditary, informational molecule.• DNA is a double-helix• Practice reading DNA Fingerprints• The sequence of nucleotides (nitrogen bases) affects transcription and translation; changes can lead to mutations.• Process, and location of transcription and translation (including figures)	Unit 7 <ul style="list-style-type: none">• Definition of Evolution• Evidence of common ancestry among species comes from many sources:<ul style="list-style-type: none">◦ Fossils◦ Biogeography◦ Embryology◦ Anatomical structures (homologous/analogous)◦ Molecular biology (DNA)• Commonality of the genetic code• Acquired traits vs inherited• Gradualism and punctuated equilibrium• Principles of Darwin's Theory of Natural Selection	Unit 10 <ul style="list-style-type: none">• Feedback loops accomplish homeostasis*• Levels of organization• Function of lymphatic and immune Systems in Humans• Coordinated interactions of major organ systems to do regulation• Coordinated interactions of major organ systems to do nutrient absorption• Coordinated interactions of major organ systems to do reproduction• Coordinated interactions of major organ systems to provide defense



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- Common organelle functions - Cytoplasm, Ribosome, Cell membrane, Genetic material
- Eukaryotic exclusive membrane-bound organelle functions - Nucleus, SER, RER, Golgi body, Mitochondria, Chloroplasts, Lysosomes, Vacuole
- Other organelle functions - Cell wall, Flagella, Cilia, Cytoskeleton, Centrioles
- Cell organelle role in cell differentiation
- Concentration gradients in role in transport and homeostasis - including terms hypotonic, hypertonic, and isotonic
- Passive transport does not require energy input
- Passive transport examples include simple diffusion and facilitated diffusion (including osmosis).
- Active transport does require energy input
- Active transport examples include pumping against a concentration gradient, endocytosis, and exocytosis
- Definition of pathogen
- Anatomy/shape of a virus
- Viruses are non-living
- Bacteriophage host
- Lytic vs Lysogenic infections
- Use of Vaccines
- Implications of Viral genetic mutations, i.e. leading to re-

- Identify gene and chromosomal mutations
- Gene regulation is controlled by internal and external factors
- Significance of sequence of nucleotides on traits
- Genes can be turned on or off in gene regulation

Unit 5

- Explain the purpose of the cell cycle in relation to organism growth.
- Describe and order the stages of the Cell Cycle & Mitosis, including creation of spindle fibers.
- Describe how DNA expression impacts the regulation of the cell cycle, cancer.
- Checkpoints exist and errors in checkpoints lead to unregulated cell division (cancer)
- Chromatin vs. chromosome
- The process and timing of DNA replication
- Each of the 2 resulting strands is half original, half new (semi-conservative)
- Replication enzymes - DNA helicase and DNA polymerase
- Function of enzymes as related to DNA replication

Unit 6

- Understanding how variation occurs due to meiosis and inheritance.

- Populations, not individuals, evolve.
- Sources of genetic variation
- Natural Selection vs Genetic Drift vs Artificial Selection and how they affect diversity.
- Gene Flow and how it affects diversity.
- Reproductive isolations that lead to speciation
- Phylogenetic / Cladistic classification
- Mutations provide a source of genetic variation for Evolution

Unit 8

- Benefits of binomial nomenclature
- Linnaeus' system of taxonomic division
- Binomial nomenclature naming rules
- Determination of relatedness through taxonomic similarities
- Hierarchy of taxa
- Characteristics of each Domain
 - Compare and contrast
- Characteristics of each Kingdom
 - Compare and contrast
- Dichotomous key interpretation
 - Forwards and backwards

Unit 9

- Describe transport and reproductive systems in plants.

- Viruses and bacteria can affect the body's internal conditions (tie in from unit 2 and 8)
 - Positive and negative
 - Compare to plant system similarities
- * Homeostasis is an overarching topic that is building off of Unit 2.*

Unit 11

- Role of producers and decomposers (harmful and/or beneficial bacteria and fungi) in ecosystem
- Carbon and Nitrogen cycles: role of plants in Carbon Cycle, role of bacteria in the Nitrogen Cycle
- Primary and Secondary Ecological Succession
- Levels of ecosystem organization: individual organism to biosphere
- Species diversity
- Population diversity defined
- Population defined
- Community defined
- Biotic and Abiotic factors
- Food chains and food webs
- Energy / mass pyramids
- Homeostasis
- Biomagnification
- Autotrophs vs Heterotrophs
- Omnivores, Herbivores, Carnivores
- Symbiotic relationships
- Competition for resources



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infections during the same season or the need of a seasonal vaccine (flu)

- Use of antibiotics & antibiotic resistance
- Anatomy/Shapes of bacteria
- Examples of viruses: HIV, Influenza, Coronavirus, cold sore

Unit 3

- Identify & investigate the role of enzymes.
- Identify the enzyme-substrate complex. Concentrate on visuals.
- Enzymes have optimal temperature and pH ranges. Use graphs.
- Enzymes can become denatured.
- Photosynthesis is the energy transfer from solar to chemical
- Cellular respiration takes place in the mitochondrion
- Photosynthesis takes place in the chloroplast
- ATP are energy molecules
- Photosynthesis: $\text{Light} + \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- Cellular Respiration: $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O} + \text{ATP}$
- Anaerobic vs Aerobic (& examples)

- Make Mendelian and Non-Mendelian genetic inheritance predictions.
- Meiosis and production of haploid gametes allows for variation in offspring; variation of traits occurs via different mechanisms, including mutations.
- Interpret and analyze pedigrees

- Explain the process of transpiration.
- Describe tropisms.
- Describe interactions occurring between systems.
- Different levels of organization in plant structure in relation to plant systems.