TEACHER: Ms. Davis **CLASS:** Biology **WEEK:** 01/29/2024 – 2/2/2024

Unit 1: Conceptual Understanding: Biologists have determined that organisms share unique characteristics that differentiate them from non-living things. Organisms range from very simple to extremely complex.

BIO.1A Students will demonstrate an understanding of the characteristics of life and biological organization.

BIO.1A.1 Develop criteria to differentiate between living and non-living things.

BIO.1A.2 Describe the tenets of cell theory and the contributions of Schwann, Hooke, Schleiden, and Virchow.

BIO.1A.3 Using specific examples, explain how cells can be organized into complex tissues, organs, and organ systems in multicellular organisms.

BIO.1A.4 Use evidence from current scientific literature to support whether a virus is living or non-living.

Unit 2: Conceptual Understanding: Organisms are composed of four primary macromolecules: carbohydrates, lipids, proteins, and nucleic acids. Metabolism is the sum of all chemical reactions between molecules within cells. Cells continuously utilize materials obtained from the environment and the breakdown of other macromolecules to synthesize their own large macromolecules for cellular structures and functions. These metabolic reactions require enzymes for catalysis.

BIO.1B Students will analyze the structure and function of the macromolecules that make up cells.

BIO.1B.1 Develop and use models to compare and contrast the structure and function of carbohydrates, lipids, proteins, and nucleic acids (DNA and RNA) in organisms.

BIO.1B.2 Design and conduct an experiment to determine how enzymes react given various environmental conditions (i.e., pH, temperature, and concentration). Analyze, interpret, graph, and present data to explain how those changing conditions affect the enzyme activity and the rate of the reactions that take place in biological organisms.

Unit 3: Conceptual Understanding: Cells are the basic units of all organisms, both prokaryotes and eukaryotes. Prokaryotic and eukaryotic cells differ in key structural features, but both can perform all functions necessary for life.

BIO.1C Students will relate the diversity of organelles to a variety of specialized cellular functions.

BIO.1C.1 Develop and use models to explore how specialized structures within cells (e.g., nucleus, cytoskeleton, endoplasmic reticulum, ribosomes, Golgi apparatus, lysosomes, mitochondria, chloroplast, centrosomes, and vacuoles) interact to carry out the functions necessary for organism survival.

BIO.1C.2 Investigate to compare and contrast prokaryotic cells and eukaryotic cells, and plant, animal, and fungal cells.

BIO.1C.3 Contrast the structure of viruses with that of cells and explain why viruses must use living cells to reproduce.

Conceptual Understanding: The structure of the cell membrane allows it to be a selectively permeable barrier and maintain homeostasis. Substances that enter or exit the cell must do so via the cell membrane. This transport across the membrane may occur through a variety of mechanisms, including simple diffusion, facilitated diffusion, osmosis, and active transport.

BIO.1D Students will describe the structure of the cell membrane and analyze how the structure is related to its primary function of regulating transport in and out of cells to maintain homeostasis.

BIO.1D.1 Plan and conduct investigations to prove that the cell membrane is a semi-permeable, allowing it to maintain homeostasis with its environment through active and passive transport processes.

BIO.1D.2 Develop and use models to explain how the cell deals with imbalances of solute concentration across the cell membrane (i.e., hypertonic, hypotonic, and isotonic conditions, sodium/potassium pump).

	OBJECTIVE/ OUTCOME	*TEACHING STRATEGIES/ACTIVITIES*	*ASSESSMENTS*	*HOMEWORK*	*I CAN STATEMENTS*
Monday	• 1A-1A.3 • 1B-1B.1 • 1C-1C.3	• **BW:** Biology State Test Questions • **EQ:** What is the function and building block of the macromolecules? • Students will complete study guide for midterm. • Students will whiteboard the study guide questions and answers. Then present them to the class. • Students will play Quizlet live to review for the exam. • **CL**: Complete chart on macromolecules.	• Instructor will check for understanding during presentation of study guide	• Study for midterm	• Identify the organelles and their functions. • Tell the difference between Eukaryotic and prokaryotic cells. • Identify the building block, function, elements, and examples of macromolecules. • Identify the parts of the cell theory and the scientist contributions.
Tuesday	• 1A-1A.3 • 1B-1B.1 • 1C-1C.3 MIDTERM EXAM	• **BW:** Log into computer and get ready to take midterm exam • **EQ:** I can pass my midterm exam • Students will complete midterm exam • Students will complete cell transport reading and questions • **CL:** What was the hardest part of the exam?	• Grade Exam	• Complete cell transport reading and questions	• Identify the organelles and their functions. • Tell the difference between Eukaryotic and prokaryotic cells. • Identify the building block, function, elements, and examples of macromolecules. • Identify the parts of the cell theory and the scientist contributions.
Wednesday	• 1D-1D.1	• **BW**: Biology state test questions • **EQ:** What makes up the cell membrane? • **AS:** Video on cell membrane • Students will complete notes on cell transport while teacher reviews PowerPoint. • Students will complete Baggie lab and turn in questions. • **CL:** What tonicity is each picture?	• Socratic questioning during notes. • Observation during lab.	None	• Identify the parts of the cell membrane and explain how it works. • Identify the difference between osmosis and diffusion.

Thursday	• 1D-1D.2	• **BW**: Biology state test questions • **EQ:** What is the difference between osmosis and diffusion? • **AS:** Video on Cell transport • Students will complete Movement of water vocabulary and present the answers. • Students will make a small model of the cell membrane. • **CL:** Diffusion or osmosis? (Identify the situation)	• Socratic questioning during review • Observation during lab	• None	• Identify the parts of the cell. • Identify the parts of the cell membrane and explain how it works. • Identify the difference between osmosis and diffusion.
Friday	• 1D-1D.2	• **BW**: Biology state test questions • **EQ:** What is the difference between tonicity of different cells? • Teacher will explain hypertonic, hypotonic, and isotonic solutions. • Students will complete beaker worksheet on tonicity and present answers. • Students will complete foldable on tonicity. • **CL:** students will clean up	• Socratic questioning during review • Grade foldable	• None	• Identify the different types of tonicity (hypertonic, hypotonic, and isotonic).