



Biomedical Science

Course Description:

Biomedical Science is a rigorous one trimester course which allows students to investigate the roles of biomedical professionals as they study the concepts of human medicine, physiology, genetics, and medical interventions. Students engage in activities in the context of real-world cases. They examine the structures and interactions of human body systems and explore the prevention, diagnosis, and treatment of disease, all while working collaboratively to understand and design solutions to the most pressing health challenges of today and the future.

A successful student in this course will be interested in biological investigation and self-motivated. It is recommended that students pass biology with a B or better before beginning this course. Exceptions can be made for highly motivated students concurrently enrolled in honors biology. The curriculum for this course is developed from the [Next Generation Science Standards](#).

Mastery Standards:

Scientific inquiry is conducted through experimental design, data analysis, and data evaluation in order to fully understand the scientific process. (HS-ETS1-1, HS-ETS1-2)

Scientific models are developed and analyzed based on investigations and current scientific knowledge to support higher level thinking. (HS-ETS1-3)

Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. (HS-LS1-3)

Technological advances show how progress from past to present and to the future impact changes in the field of forensic science. (HS-LS3-3)

Cause and correlation are differentiated to make claims about specific cause and effect relationships. (HS-LS3-1, HS-LS3-2)

Unit	Description of Unit and Learning Targets
<p>Unit Title: Sickle Cell</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How does sickle cell affect the function of the body? 	<p>Students will.....</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Analyze the pathology of sickle cell • Identify the organs and body systems affected by sickle cell • Calculate genetic frequencies • Describe complications of sickle cell
<p>Unit Title: Gel Electrophoresis</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How is gel electrophoresis used to analyze DNA? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Load and Run gels • Interpret gels • Analyze DNA
<p>Unit Title: Genetic Engineering</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How can genetic engineering help personalize medicine? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Analyze restriction enzymes • Differentiate between Hela cells and healthy cells • Identify and Analyze the ethics of various genetic interventions (ie: CRISPER, GMO)
<p>Unit Title: Diabetes</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How does diabetes affect the function of the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Analyze the pathology of diabetes • Identify the organs and body systems affected by diabetes • Compare feedback loops • Describe complications of diabetes
<p>Unit Title: Heart Disease</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How does heart disease affect the function of the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Analyze the pathology of heart disease • Identify the organs and body systems affected by heart disease • Describe medical interventions for the heart