# PLTW PRINCIPLES OF BIOMEDICAL SCIENCE Curriculum

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| [PLTW - Principles of Biomedical Science] Course Information | |
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| **CURRICULUM/CONTENT AREA** | **COURSE LENGTH** |
| Science | 1 semester; 2 terms |
| **GRADE LEVEL** | **DATE LAST REVIEWED** |
| 9 - 12 | 2016 Approved Curricular Docs<br>2023 Evaluation of Program |
| **PREREQUISITE(s)** ***if applicable*** | **BOARD APPROVAL DATE** |
| NA | *December 2024* |
| **PRIMARY RESOURCE** ***if applicable*** | |
| Project Lead the Way course materials | |

## Desired Results

### COURSE DESCRIPTION

This course serves to provide foundational knowledge and skills in fields such as biology, anatomy & physiology, genetics, microbiology, and epidemiology as well as engage students in how this content can be applied to real world situations, cases, and problems. Students will analyze the evidence found at a crime scene and help the medical examiner uncover clues left on a body to solve a mystery; question, diagnose, and propose treatment and care for patients in a family medical practice; track down the source of a mysterious outbreak at a local hospital; and access and stabilize a patient during an emergency and prepare for medical surge and mobile medical care. Additionally, this course provides an opportunity to explore specific biomedical careers and laboratory/clinical skills. (PLTW)

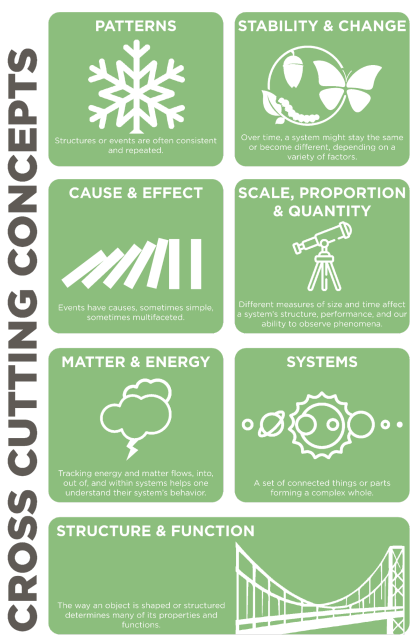
Students may consider engaging in the following Industry Certifications:

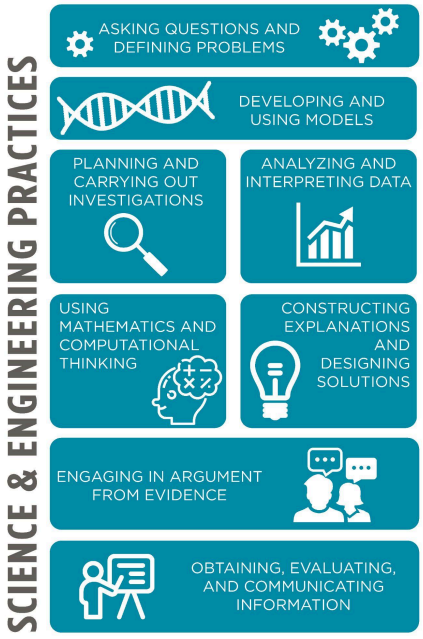
- Biotechnician Assistant Credentialing Exam Certification (BACE)
- National Health Science Certification (NCHSE)
- National Occupational Competency Testing Institute Certifications (NOCTI)
- First Aid, CPR, and AED Certifications
- Pharmacy Technician Certification
- STOP THE BLEED® Certification

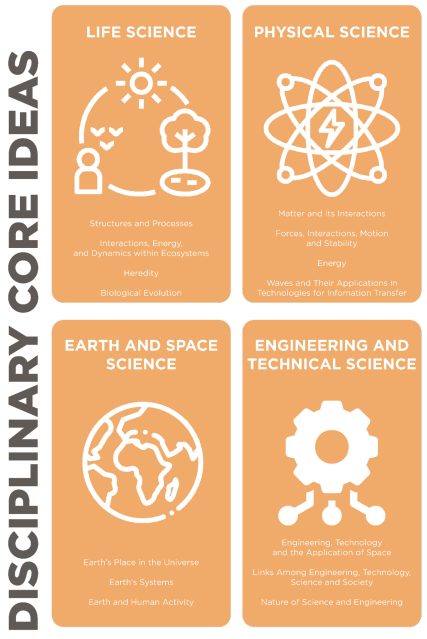
- National Healthcareer Association
- Wilderness First Aid Training

| ENDURING UNDERSTANDINGS | ESSENTIAL QUESTIONS |
|---|---|
| **Patterns:** Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.<br><br>**Cause and Effect:** Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.<br><br>**Scale, Proportion, and Quantity:** In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.<br><br>**Systems and Models:** A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.<br><br>**Energy and Matter:** Tracking energy and matter flows, into, and out of, and within systems helps one understand their system's behavior.<br><br>**Structure and Function:** The way an object is shaped or structured determines many of its properties and functions.<br><br>**Stability and Change:** For both | Unit 1:<br>➔ *What are different forms of evidence, how infallible are they, and how are they useful in resolving potential criminal cases?*<br>➔ *How can varying forms of evidence be evaluated for meaning?*<br>➔ *How does technology help bring resolution to forensic cases? Or how does technology advance the understanding in forensic science?*<br>➔ *How can the cause, mechanism, and manner of death be established?*<br>➔ *What information can be collected from an autopsy?*<br>➔ *How can information collected during an autopsy lead to an understanding of disease and/or cause of death?*<br>➔ *In what ways are the careful evaluation of evidence and accurate recording of data critical to establishing legitimate testimony?*<br>➔ *How can individual pieces of evidence, evaluated against the whole, be used to resolve questions?*<br>➔ *In what ways can scientific writings and presentations be utilized to present evidence and justify conclusions?*<br>➔ *To what extent can current understandings be reinforced through practice?*<br><br>Unit 2:<br>➔ *How can an individual's health status be assessed and evaluated?*<br>➔ *What factors make an individual more susceptible to disease?*<br>➔ *What are strategies for maintaining health?*<br>➔ *What are effective means of communicating with others in order to reach common goals?*<br>➔ *What qualities make for an effective medical professional?*<br>➔ *In what ways, and for what purpose, can patient confidentiality be maintained?*<br>➔ *How can changes in a genome lead to disease?*<br>➔ *Why is an understanding of heredity an important factor in human health?*<br>➔ *In what ways are genetic changes acquired?*<br>➔ *In what ways can altered biological processes lead to disease?*<br>➔ *How can the genetic health of an individual be evaluated?*<br><br>Unit 3:<br>➔ *In what ways, and for what purpose, can microorganisms be characterized?*<br>➔ *What factors affect the growth and death of microorganisms?* |

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| designed and natural systems, conditions that affect stability and factors that control the rates of change are critical elements to consider and understand. | ➔ *What are effective strategies for preventing and treating disease?*<br>➔ *How does an immune system identify and eradicate infection?*<br>➔ *How can pieces of evidence be evaluated to form conclusions and inform decisions?*<br>➔ *How can an individual's health status be assessed and evaluated?*<br>➔ *How is patient case information summarized and communicated efficiently?*<br>➔ *What professions respond in emergency situations, what are their roles, and how do they work together?*<br>➔ *What are several career paths in the field of emergency medicine?*<br>➔ *How do patient vitals and presumptive diagnoses inform the prioritization for treatment options in emergency medical situations? 3*<br>➔ *What make for effective emergency and disaster response protocols?*<br>➔ *How do medical professionals manage emergencies that involve multiple patients?*<br>➔ *To respond to emergency situations, what common medical resources and facilities need to be available?*<br>➔ *What are features of a user-friendly app? In what ways can technology enable a faster response and quicker resolution during medical emergencies?*<br><br>Unit 4:<br>➔ *How do the engineering and experimental design processes enable innovation?*<br>➔ *Who innovates, and why? What is the process for innovation and what personal characteristics are required for success?*<br>➔ *How do innovations impact and advance human health?*<br>➔ *How does technology function as a vehicle for innovation? In what ways do different types of scientists and engineers collaborate in the biomedical sciences field?*<br>➔ *What are potential untapped resources that could work to advance the field of biomedical sciences?* |
| **3 Dimensional Standards** | |




| Cross Cutting Concepts BY GRADE BAND AND UNIT | Unit 1 | Unit 2 | Unit 3 | Unit 4 |
|---|---|---|---|---|
| **Standard SCI.CC1 - Patterns**<br>Students Observe patterns in systems at different scales and cite patterns as empirical evidence for causality in supporting their explanations of phenomena. They recognize classifications or explanations used at one scale may not be useful or need revision using a different scale, thus requiring improved investigations and experiments. They use mathematical representations to identify and analyze patterns of performance in order to reengineer a designed system. | x | x | x | x |
| **Standard SCI.CC2 - Cause and Effect**<br>Students understand empirical evidence is required to differentiate between cause and correlation and to make claims about specific causes and effects. They suggest cause and effect relationships to explain and predict behaviors in complex natural and designed systems. They also propose causal relationships by examining what is known about smaller scale mechanisms within the system. They recognize changes in systems may have various causes that may not have equal effects. | x | x | x | x |
| **Standard SCI.CC3 - Scale, Proportion, and Quantity**<br>Students understand the significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs. They recognize patterns observable at one scale may not be observable or exist at other scales, and some systems can only be studied indirectly as they are too small, too large, too fast, or too slow to observe directly. They use orders of magnitude to understand how a model at one scale relates to a model at another scale. They use algebraic thinking to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth). | X | x | x | x |
| **Standard SCI.CC4 - Systems and System Models**<br>Students investigate or analyze a system by defining its boundaries and initial conditions, as well as its inputs and outputs. They use models (e.g., physical, mathematical, computer models) to simulate the flow of energy, matter, and interactions within and between systems at different scales. They also use models and simulations to predict the behavior of a system and recognize that these | x | x | x | x |

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| predictions have limited precision and reliability due to the assumptions and approximations inherent in the models. They also design systems to do specific tasks. | | | | |
| **Standard SCI.CC6 - Structure and Function**<br>Students investigate systems by examining the properties of different materials, the structures of different components, and their interconnections to reveal the system's function and solve a problem. They infer the functions and properties of natural and designed objects and systems from their overall structure, the way their components are shaped and used, and the molecular substructures of their various materials. | x | x | x | x |
| **Standard SCI.CC7 - Stability and Change**<br>Students understand much of science deals with constructing explanations of how things change and how they remain stable. They quantify and model changes in systems over very short or very long periods of time. They see some changes are irreversible, and negative feedback can stabilize a system, while positive feedback can destabilize it. They recognize systems can be designed for greater or lesser stability. | x | x | x | x |

| Science and Engineering Practices by GRADE BAND and UNIT | Unit 1 | Unit 2 | Unit 3 | Unit 4 |
|---|---|---|---|---|
| **standard SCI.SEP1 -**<br>**A.Asking Questions**<br>Students ask questions to formulate, refine, and evaluate empirically testable questions. This includes the following:<br>• Ask questions that arise from careful observation of phenomena, or unexpected results, to clarify and seek additional information.<br>• Ask questions that arise from examining models or theories to clarify and seek additional information and relationships.<br>• Ask questions to determine relationships, including quantitative relationships, between independent and dependent variables.<br>• Ask questions to clarify and refine a model or an explanation<br>• Evaluate a question to determine if it is testable and relevant.<br>• Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory.<br>• Ask and evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of the design.<br>**B.Defining Problems**<br>Students formulate, refine, and evaluate design problems using models and simulations. This includes the following:<br>• Define a design problem that involves the development of a process or system with interacting components and criteria and constraints that may include social, technical, and environmental considerations.<br>• Clarify and refine an engineering problem. | x | x | x | x |
| **Standard SCI.SEP2 - Developing and Using Models**<br>Students use, synthesize, and develop models to predict and show relationships among variables and between systems and their components in the natural and designed world. This includes the following:<br>• Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism, or system in order to select or revise a model that best fits the evidence or design criteria.<br>• Design a test of a model to ascertain its reliability.<br>• Develop, revise, and use models based on evidence to illustrate and predict the relationships between systems or between components of a system.<br>• Develop and use multiple types of models to provide mechanistic accounts and predict phenomena. Move flexibly between these model types based on merits and limitations. Develop a complex model that allows for manipulation and testing of a proposed process or system. | x | x | x | x |

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| • Develop and use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and solve problems. | | | | |
| **Standard SCI.SEP3 - Planning and Conducting Investigations**<br>Students plan and carry out investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models: This includes the following:<br>• Individually and collaboratively plan an investigation or test a design to produce data that can serve as evidence to build and revise models, support explanations for phenomena, and refine solutions to problems. Consider possible variables or effects and evaluate the investigation's design to ensure variables are controlled.<br>• Individually and collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence.<br>• In the design, decide on types, how much, and accuracy of data needed to produce reliable measurements. Consider limitations on the precision of the data (e.g., number of trials, cost, risk, time) and refine the design accordingly.<br>• Plan and conduct an investigation or test a design solution in a safe and ethical manner including considerations of environmental, social, and personal impacts.<br>• Select appropriate tools to collect, record, analyze, and evaluate data.<br>• Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.<br>• Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or to improve performance relative to criteria for success. | x | x | x | x |
| **Standard SCI.SEP4 - Analyze and Interpret Data**<br>Students engage in more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data. This includes the following:<br>• Analyze data using tools, technologies, and models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.<br>• Apply concepts of statistics and probability to scientific and engineering questions and problems, using digital tools when feasible.<br>• Concepts should include determining the fit of functions, slope, and intercepts to data, along with correlation coefficients when the data is linear.<br>• Consider and address more sophisticated limitations of data analysis (e.g., sample selection) when analyzing and interpreting data.<br>• Compare and contrast various types of data sets (e.g., self-generated, archival) to examine consistency of measurements and observations.<br>• Evaluate the impact of new data on a working explanation or model of a proposed process or system.<br>• Analyze data to optimize design features or characteristics of system components relative to criteria for success. | x | x | x | x |
| **Standard SCI.SEP6 -**<br>**A.Construct Explanations** Students create explanations that are supported by multiple and independent student generated sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:<br>• Make quantitative and qualitative claims regarding the relationship between dependent and independent variables.<br>• Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources, including students' own investigations, models, theories, simulations, and peer review.<br>• Explanations should reflect the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.<br>• Apply scientific ideas, principles, and evidence to provide an explanation of phenomena taking into account possible, unanticipated effects.<br>• Apply scientific reasoning, theory, and models to link evidence to the claim and to assess the extent to which the reasoning and data support the explanation. | x | x | x | x |

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| B. **Design Solutions** Students create designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. This includes the following:<br>• Design, evaluate, and refine a solution to a complex real world problem, based on scientific knowledge, student-generated sources of evidence, and prioritized criteria. Consider tradeoffs.<br>• Apply scientific ideas, principles, and evidence to solve design problems, taking into account possible unanticipated effects. | | | | |
| **Standard SCI.SEP7 - Engage in Arguments**<br>Students use appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world. Arguments may also come from current scientific or historical episodes in science. This includes the following:<br>• Compare and evaluate competing arguments or design solutions in light of currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and ethical issues.<br>• Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.<br>• Respectfully provide and receive critiques on scientific arguments by probing reasoning and evidence, by challenging ideas and conclusions, by responding thoughtfully to diverse perspectives, and by determining what additional information is required to resolve contradictions.<br>• Construct, use, and present oral and written arguments or counter-arguments based on data and evidence.<br>• Make and defend a claim based on evidence about the natural world or the effectiveness of a design solution that reflects scientific knowledge and student-generated evidence.<br>• Evaluate competing design solutions to a real-world problem based on scientific ideas and principles, empirical evidence, and logical arguments. Consider relevant factors (e.g. economic, societal, environmental, and ethical considerations). | x | x | x | x |
| **Standard SCI.SEP8 - Obtain, evaluate, and Communication Information**<br>Students evaluate the validity and reliability of claims, methods, and designs. This includes the following:<br>• Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions, and to obtain scientific and technical information.<br>• Summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.<br>• Compare, integrate, and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively, or text-based) in order to address a scientific question or solve a problem.<br>• Gather, read, and evaluate scientific and technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.<br>• Synthesize and evaluate the validity and reliability of multiple claims, methods, or designs that appear in scientific and technical texts or media reports. Verify the data when possible.<br>• Communicate scientific and technical information in multiple formats, including orally, graphically, textually, and mathematically. Examples of information could include ideas about phenomena or the design and performance of a proposed process or system. | x | x | x | x |

| Disciplinary Core Ideas by GRADE BAND and UNIT | | | | |
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| LIFE SCIENCE | | | | |
| *Standard SCI.LS1* | | | | |
| **A. STRUCTURE & FUNCTION:** Systems of specialized cells within organisms help perform essential functions of life. Any one system in an organism is made up of numerous parts. Feedback mechanisms maintain an organism's internal conditions within certain limits and mediate behaviors. | X | X | X | X |

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| **B. GROWTH AND DEVELOPMENT OF ORGANISMS:** Growth and division of cells in organisms occurs by mitosis and differentiation for specific cell types. | | X | X | |
| **C. ORGANIZATION FOR MATTER AND ENERGY FLOW IN ORGANISMS:** The molecules produced through photosynthesis are used to make amino acids and other molecules that can be assembled into proteins or DNA. Through cellular respiration, matter and energy flow through different organizational levels of an organism as elements are recombined to form different products and transfer energy. | X | X | X | X |
| **D. INFORMATION PROCESSING:** Organisms can process and store a variety of information through specific chemicals and interconnected networks. | | X | X | |
| **Standard SCI.LS2** | | | | |
| A. **ECOSYSTEMS DYNAMICS, FUNCTIONING, AND RESILIENCE:** If a biological or physical disturbance to an ecosystem occurs, including one induced by human activity, the ecosystem may return to its more or less original state or become a very different ecosystem, depending on the complex set of interactions within the ecosystem. | | | | X |
| **Standard SCI.LS3** | | | | |
| A. **INHERITANCE OF TRAITS:** DNA carries instructions for forming species' characteristics. Each cell in an organism has the same genetic content, but genes expressed by cells can differ. | X | X | X | |
| B. **VARIATION OF TRAITS:** The variation and distribution of traits in a population depend on genetic and environmental factors. Genetic variation can result from mutations caused by environmental factors or errors in DNA replication, or from chromosomes swapping sections during meiosis. | X | X | X | |
| **Standard SCI.LS4** | | | | |
| A. **NATURAL SELECTION:** Natural selection occurs only if there is variation in the genes and traits between organisms in a population. Traits that positively affect survival can become more common in a population. | | | X | |
| B. **BIODIVERSITY AND HUMANS:** Biodiversity is increased by formation of new species and reduced by extinction. Humans depend on biodiversity but also have adverse impacts on it. Sustaining biodiversity is essential to supporting life on Earth. | | | | X |

## UNIT 1: *Medical Investigation*

*In Unit 1 students engage in forensic science and medical examination investigations in order to: a.) explore biological and forensic science careers; b.) gain experience in experimental design and data analysis; c.) learn about biomolecules and their role in determining identity; d.) learn about human anatomy and physiology and causes of death; e.) practice synthesizing multiple forms of data to draw conclusions; and f.) work to develop professional communication skills.*

## UNIT 1 DESIRED RESULTS

ESSENTIAL QUESTION:

- ➔ *What are different forms of evidence, how infallible are they, and how are they useful in resolving potential criminal cases? (1.1)*
- ➔ *How can varying forms of evidence be evaluated for meaning? (1.1)*
- ➔ *How does technology help bring resolution to forensic cases? Or how does technology advance the understandings in forensic science? (1.1)*
- ➔ *How can the cause, mechanism, and manner of death be established? (1.2)*
- ➔ *What information can be collected from an autopsy? (1.2)*
- ➔ *How can information collected during an autopsy lead to an understanding of disease and/or cause of death? (1.2)*
- ➔ *In what ways are the careful evaluation of evidence and accurate recording of data critical to establishing legitimate testimony? (1.2)*
- ➔ *How can individual pieces of evidence, evaluated against the whole, be used to resolve questions? (1.3)*
- ➔ *In what ways can scientific writings and presentations be utilized to present evidence and justify conclusions? (1.3)*
- ➔ *To what extent can current understandings be reinforced through practice? (1.3)*

UNIT PRIORITY STANDARDS: *Students will know and be able to…*

| *Cross Cutting Concepts* | *Science & Engineering Practices (SEP)* | *Disciplinary Core Idea (DCI) - NGSS* |
|---|---|---|
| ➔ Standard SCI.CC1 - Patterns<br>➔ Standard SCI.CC2 - Cause and Effect<br>➔ Standard SCI.CC3 - Scale, Proportion, and Quantity<br>➔ Standard SCI.CC4 - Systems and System Models<br>➔ Standard SCI.CC6 - Structure and Function<br>➔ Standard SCI.CC7 - Stability and Change | ➔ Standard SCI.SEP1 - .Asking Questions<br>➔ Standard SCI.SEP2 - Developing and Using Models<br>➔ Standard SCI.SEP3 - Planning and Conducting Investigations<br>➔ Standard SCI.SEP4 - Analyze and Interpret Data<br>➔ Standard SCI.SEP6 - .Construct Explanations<br>➔ Standard SCI.SEP7 - Engage in Arguments<br>➔ Standard SCI.SEP8 - Obtain, evaluate, and Communication Information | ➔ Systems of specialized cells within organisms help them perform the essential functions of life<br>➔ All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells<br>➔ Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.<br>➔ The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their |

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| | | hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells.<br>➔ Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA . All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. |

LEARNING TARGETS

***Career Readiness:***

CAR-A Explain the education and skills required for biomedical science professionals.

CAR-B Describe the societal impact of biomedical science professionals.

***Communication:***

COM-A Communicate effectively with a specific audience.

***Collaboration:***

COL-A Create an effective team environment to promote successful goal attainment.

***Ethical Reasoning and Mindset:***

ERM-A Apply professional standards, as they relate to personal traits of a biomedical science professional.

***Critical and Creative Problem-Solving***

CCP-A Devise and execute a plan to solve a problem

CCP-B Use data and evidence to evaluate and justify decisions.

CCP-C Apply an iterative design process to creatively address a need or solve a problem.

***Experimental Design:***

EXD-A Design and carry out an experiment that investigates a research question.

EXD-B Collect and analyze experimental data to draw conclusions.

***General Laboratory Practices:***

GLP-B Demonstrate mastery of general laboratory practice common to many biomedical science fields.

***Anatomy and Physiology:***

ANP-A Explain the connection between structure and function in biology.

ANP-B Describe how body systems collaboratively function to maintain homeostasis and health.

***Clinical Medicine:***

CME-A Document patient information

CME-B Synthesize complex medical information to diagnose a disease, disorder, or injury or to determine cause of death.

CME-C Respond to patient and/or community needs and propose treatment strategies for disease, disorder, injury, or the prevention thereof.

***Molecular Biology and Genetics:***

MBG-A Explain the role of DNA, RNA, and proteins in the inheritance of traits and the development of diseases or disorders.

MBG-D Select and use appropriate tools, techniques, and/or technologies to analyze genetic information and diagnose disease.

***Microbiology:***

MIB-A Explain how the composition, structure, and activities of cells build functional systems in the human body.

***Performance Task Description(s)***

- ➔ Activities of 1.1: "Investigating the scene" - Students begin their training as medical investigators. Shadowing members of the forensic investigation team, they will document and analyze the clues left at the scene of a woman's death.. Students will sketch the crime scene and document evidence, analyze trace evidence in the lab, analyze biometric data of interviewed suspects, as well as record a video check-in for the police commissioner – chronicling what they have learned about the case in this lesson. Students will also be introduced to experimental design as well as proper scientific documentation. (PLTW)
- ➔ Activities of 1.2: "Master the Morgue" - Students shadow the medical examiner to investigate what clues the body provides about the cause and manner of death. Students explore human body system structure and function as they investigate the composition of an autopsy. They will explore the many pieces of evidence that go into determining time of death and complete toxicology testing to determine the presence of drugs or chemicals in the body of the decedent. Examining basic tissue types in the body, students will zoom in to the microscopic level for clues that can't be seen with the naked eye. Students will then explore gross anatomy as they complete an "autopsy" dissection of a preserved heart. (PLTW)
- ➔ Problem in 1.3: "Open Investigation" - Students will be tasked to solve a new case. They will explore a virtual crime scene, gather evidence from the scene and persons of interest, complete laboratory testing, analyze evidence to deduce what happened, and complete an autopsy report using test and examination results. In preparation for court testimony, they must create an evidence board that illustrates the case to a judge or jury. (PLTW)

***Success Criteria Rubrics***

- ➔ Standards-aligned rubrics are used for communicating the success criteria, goal setting, reflecting during & after the unit learning, and feedback. (Rubric links- TBD)

***Key Feedback & Assessment Strategies*** *(What are different ways students can demonstrate their learning?)**:***

- ➔ *Laboratory investigations, case studies, simulations, role playing, digital design: podcasts/videos/etc, thought experiments, design thinking*
- ➔ *Lab notebook/focused notes and career journal*
- ➔ *Assessment of Unit Knowledge and Skills- Examples for Targeted Data Collection*
  - ◆ *Checks for understanding (exit slips, quickwrites, etc.) aligned to unit guiding questions/activities objectives*
  - ◆ *Lab investigation tasks and analysis questions*
  - ◆ *Assess section and unit concepts including vocabulary terms on summative assessment via test and project*
- ➔ *Extensions & College/Career Readiness may include:*
  - ◆ Career Journal
  - ◆ Guest speakers

*The above is not an exhaustive list but shows the possible strategies & tasks that provide meaningful student evidence of learning.*

## UNIT 2: *Clinical Care*

*Students assume the role of different medical professionals working through the schedule of patients in a family care clinic in order to: a.) explore medical careers; b.) practice professional communication; c.) gain experience collecting, recording, and interpreting physiological data; d.) learn how to perform routine medical tests and evaluate results; e.) learn about cutting edge technologies revolutionizing healthcare; f.) understand the interconnectedness between body systems; and g.) explore the various causations and inheritance of disease.*

## UNIT 2 DESIRED RESULTS

**ESSENTIAL QUESTION:**

- ➔ *How can an individual's health status be assessed and evaluated?*
- ➔ *What factors make an individual more susceptible to disease?*
- ➔ *What are strategies for maintaining health?*
- ➔ *What are effective means of communicating with others in order to reach common goals?*
- ➔ *What qualities make for an effective medical professional?*
- ➔ *In what ways, and for what purpose, can patient confidentiality be maintained?*
- ➔ *How can changes in a genome lead to disease?*
- ➔ *Why is an understanding of heredity an important factor in human health?*
- ➔ *In what ways are genetic changes acquired?*
- ➔ *In what ways can altered biological processes lead to disease?*
- ➔ *How can the genetic health of an individual be evaluated?*

**UNIT PRIORITY STANDARDS:** *Students will know and be able to…*

| *Cross Cutting Concepts* | *Science & Engineering Practices (SEP)* | *Disciplinary Core Idea (DCI)* |
|---|---|---|
| ➔ Standard SCI.CC1 - Patterns<br>➔ Standard SCI.CC2 - Cause and Effect<br>➔ Standard SCI.CC3 - Scale, Proportion, and Quantity<br>➔ Standard SCI.CC4 - Systems and System Models<br>➔ Standard SCI.CC6 - Structure and Function<br>➔ Standard SCI.CC7 - Stability and Change | ➔ Standard SCI.SEP1 - .Asking Questions<br>➔ Standard SCI.SEP2 - Developing and Using Models<br>➔ Standard SCI.SEP3 - Planning and Conducting Investigations<br>➔ Standard SCI.SEP4 - Analyze and Interpret Data<br>➔ Standard SCI.SEP6 - .Construct Explanations<br>➔ Standard SCI.SEP7 - Engage in Arguments<br>➔ Standard SCI.SEP8 - Obtain, evaluate, and Communication Information | ➔ Systems of specialized cells within organisms help them perform the essential functions of life.<br>➔ All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells<br>➔ Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.<br>➔ Feedback mechanisms maintain a living system's internal conditions within certain |

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| | | limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system<br>➔ In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow.<br>➔ The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells.<br>➔ As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.<br>➔ As a result of these chemical reactions, energy is transferred from one system of interacting molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment.<br>➔ Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes.<br>➔ Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA . All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function<br>➔ In sexual reproduction, chromosomes can sometimes swap sections during the |

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| | | process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited.<br>➔ Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors<br>➔ Genetic information provides evidence of evolution. DNA sequences vary among species, but there are many overlaps; in fact, the ongoing branching that produces multiple lines of descent can be inferred by comparing the DNA sequences of different organisms. Such information is also derivable from the similarities and differences in amino acid sequences and from anatomical and embryological evidence |

LEARNING TARGETS

***Career Readiness:***

CAR-A Explain the education and skills required for biomedical science professionals.

CAR-B Describe the societal impact of biomedical science professionals.

***Communication:***

COM-A Communicate effectively with a specific audience.

***Collaboration:***

COL-A Create an effective team environment to promote successful goal attainment.

***Ethical Reasoning and Mindset:***

ERM-A Apply professional standards, as they relate to personal traits of a biomedical science professional.

***Critical and Creative Problem-Solving***

CCP-A Devise and execute a plan to solve a problem

CCP-B Use data and evidence to evaluate and justify decisions.

CCP-C Apply an iterative design process to creatively address a need or solve a problem.

***Experimental Design:***

EXD-A Design and carry out an experiment that investigates a research question.

EXD-B Collect and analyze experimental data to draw conclusions.

***General Laboratory Practices:***

GLP-B Demonstrate mastery of general laboratory practice common to many biomedical science fields.

***Anatomy and Physiology:***

ANP-A Explain the connection between structure and function in biology.

ANP-B Describe how body systems collaboratively function to maintain homeostasis and health.

***Clinical Medicine:***

CME-A Document patient information

CME-B Synthesize complex medical information to diagnose a disease, disorder, or injury or to determine cause of death.

CME-C Respond to patient and/or community needs and propose treatment strategies for disease, disorder, injury, or the prevention thereof.

***Molecular Biology and Genetics:***

MBG-A Explain the role of DNA, RNA, and proteins in the inheritance of traits and the development of diseases or disorders.

MBG-B Describe cell division and the process by which chromosomes replicate leading to genetic diversity.

MBG-C Analyze genetic information to predict patterns of inheritance.

MBG-D Select and use appropriate tools, techniques, and/or technologies to analyze genetic information and diagnose disease.

***Microbiology:***

MIB-A Explain how the composition, structure, and activities of cells build functional systems in the human body.

## UNIT 2 ASSESSMENT EVIDENCE

*Performance is evaluated in terms of… Students will show their learning by…*

***Performance Task Description(s):***

- Activities of 2.1: "Talk to Your Doc" - Students take on a variety of health care roles involved at a medical care clinic. They will be introduced to different patients as lessons highlight key clinical skills in addition to the biological and psychological content. Students will practice effective communication skills (including telehealth), document patient data and medical history in accordance with patient privacy regulations. They will collect and analyze patient vital signs and investigate the connection those have to overall health and homeostasis of the body. Students will then learn and model how primary care physicians use this information to provide care and diagnose disease. Students will interpret results in patients' routine blood work. As a culminating task, students will apply what they have learned to design a health plan for a specific patient with a chronic health condition. (PLTW)
- Activities of 2.1: "Decoding a Diagnosis" - Students will explore the relationship between DNA, chromosomes, genes, and proteins as they continue to model clinical care through the diagnosis of patients. Students will connect the science concepts of protein synthesis and mutations as they relate to a variety of health conditions. At the end of these activities, students will apply their knowledge and skills to help a family gain an understanding of genetics in relation to a specific disease. (PLTW)
- Activities of 2.3: " New to the Practice" - Students will be tasked with helping a new patient to the clinic. Medical evidence will be evaluated, background medical history will be collected, vital signs will be recorded, blood work results will be interpreted to determine a medical diagnosis for the patient. (PLTW)

***Success Criteria Rubrics***

- Standards-aligned rubrics are used for communicating the success criteria, goal setting, reflecting during & after the unit learning, and feedback. (Rubric links- TBD)

***Key Feedback & Assessment Strategies*** *(What are different ways students can demonstrate their learning?)**:***

- *Laboratory investigations, case studies, simulations, role playing, digital design: podcasts/videos/etc, thought experiments, design thinking*
- *Lab notebook/focused notes and career journal*
- *Assessment of Unit Knowledge and Skills- Examples for Targeted Data Collection*

- *Checks for understanding (exit slips, quickwrites, etc.) aligned to unit guiding questions/activities objectives*
- *Lab investigation tasks and analysis questions*
- *Assess section and unit concepts including vocabulary terms on summative assessment via test and project*

➔ *Extensions & College/Career Readiness may include:*

- Career Journal
- Guest speakers

*The above is not an exhaustive list but shows the possible strategies & tasks that provide meaningful student evidence of learning.*

## UNIT 3: *Outbreaks & Emergencies*

*Working as public health officials and then as emergency responders, students are presented with a series of events they must address while exploring: a.) careers in public health, epidemiology, microbiology and emergency medicine; b.) professional communication and presentation; c.) data analysis; d.) processes by which critical medical decisions are made and acted upon; e.) processes by which patients are diagnosed with a contagious disease and by which a causative agent is identified.*

## UNIT 3 DESIRED RESULTS

ESSENTIAL QUESTION:

- ➔ *In what ways, and for what purpose, can microorganisms be characterized?*
- ➔ *What factors affect the growth and death of microorganisms?*
- ➔ *What are effective strategies for preventing and treating disease?*
- ➔ *How does an immune system identify and eradicate infection?*
- ➔ *How can pieces of evidence be evaluated to form conclusions and inform decisions?*
- ➔ *How can an individual's health status be assessed and evaluated?*
- ➔ *How is patient case information summarized and communicated efficiently?*
- ➔ *What professions respond in emergency situations, what are their roles, and how do they work together?*
- ➔ *What are several career paths in the field of emergency medicine?*
- ➔ *How do patient vitals and presumptive diagnoses inform the prioritization for treatment options in emergency medical situations? 3*
- ➔ *What makes for effective emergency and disaster response protocols?*
- ➔ *How do medical professionals manage emergencies that involve multiple patients?*
- ➔ *To respond to emergency situations, what common medical resources and facilities need to be available?*
- ➔ *What are features of a user-friendly app?*
- ➔ *In what ways can technology enable a faster response and quicker resolution during medical emergencies?*

UNIT PRIORITY STANDARDS: *Students will know and be able to…*

| *Cross Cutting Concepts* | *Science & Engineering Practices (SEP)* | *Disciplinary Core Idea (DCI)* |
|---|---|---|
| ➔ Standard SCI.CC1 - Patterns<br>➔ Standard SCI.CC2 - Cause and Effect<br>➔ Standard SCI.CC3 - Scale, Proportion, and Quantity<br>➔ Standard SCI.CC4 - Systems and System Models<br>➔ Standard SCI.CC6 - Structure and Function<br>➔ Standard SCI.CC7 - Stability and Change | ➔ Standard SCI.SEP1 - .Asking Questions<br>➔ Standard SCI.SEP2 - Developing and Using Models<br>➔ Standard SCI.SEP3 - Planning and Conducting Investigations<br>➔ Standard SCI.SEP4 - Analyze and Interpret Data<br>➔ Standard SCI.SEP6 - .Construct Explanations | ➔ Systems of specialized cells within organisms help them perform the essential functions of life.<br>➔ All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.<br>➔ Multicellular organisms have a hierarchical |

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| | ➔ Standard SCI.SEP7 - Engage in Arguments<br>➔ Standard SCI.SEP8 - Obtain, evaluate, and Communication Information | structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.<br>➔ Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.<br>➔ In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism<br>➔ The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells.<br>➔ Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA . All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function.<br>➔ In sexual reproduction, chromosomes can sometimes swap sections during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and |

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| | | remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited.<br>➔ Natural selection occurs only if there is both (1) variation in the genetic information between organisms in a population and (2) variation in the expression of that genetic information—that is, trait variation—that leads to differences in performance among individuals.<br>➔ The traits that positively affect survival are more likely to be reproduced, and thus are more common in the population. |

LEARNING TARGETS

***Career Readiness:***

CAR-A Explain the education and skills required for biomedical science professionals.

CAR-B Describe the societal impact of biomedical science professionals.

***Communication:***

COM-A Communicate effectively with a specific audience.

***Collaboration:***

COL-A Create an effective team environment to promote successful goal attainment.

***Ethical Reasoning and Mindset:***

ERM-A Apply professional standards, as they relate to personal traits of a biomedical science professional.

***Critical and Creative Problem-Solving***

CCP-A Devise and execute a plan to solve a problem

CCP-B Use data and evidence to evaluate and justify decisions.

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***Experimental Design:***

EXD-A Design and carry out an experiment that investigates a research question.

EXD-B Collect and analyze experimental data to draw conclusions.

***General Laboratory Practices:***

GLP-B Demonstrate mastery of general laboratory practice common to many biomedical science fields.

***Anatomy and Physiology:***

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CME-C Respond to patient and/or community needs and propose treatment strategies for disease, disorder, injury, or the prevention thereof.

***Microbiology:***
MIB-A Explain how the composition, structure, and activities of cells build functional systems in the human body.

## UNIT 3 ASSESSMENT EVIDENCE

*Performance is evaluated in terms of… Students will show their learning by…*

***Performance Task Description(s):***

- ➔ Activities of 3.1: " Nosocomial Nightmare" - Students play a role in a disease defense team that has been called to a local hospital experiencing an unknown disease outbreak. Students are challenged to investigate the case of non-related patients showing symptoms of a hospital acquired infection to determine the "why and how" patients are getting sick to prevent a continuation or future outbreak. Throughout the investigation students will evaluate the chain of infection, characteristics of disease causing agents, as well as the structure and function of the human immune system. (PLTW)
- ➔ Activities of 3.2: "Emergency Response" - Students will serve as part of an emergency medical response team, trained to respond when access to care is limited during accidents, natural disasters, and other mass casualty events. As they respond to an emergency in the field, students will investigate assessment and stabilization of a patient, drug delivery and metabolism,techniques to stop bleeding, and communication between medical care providers. (PLTW)
- ➔ Activities of 3.3: "Information Sharing" - Students will apply what they have learned in the unit as they plan to trace outbreaks, respond to emergencies (local or global), increase response efficiency in emergencies, or provide another public health function. (PLTW)

***Success Criteria Rubrics***

- ➔ Standards-aligned rubrics are used for communicating the success criteria, goal setting, reflecting during & after the unit learning, and feedback. (Rubric links- TBD)

***Key Feedback & Assessment Strategies*** *(What are different ways students can demonstrate their learning?)**:***

- ➔ *Laboratory investigations, case studies, simulations, role playing, digital design: podcasts/videos/etc, thought experiments, design thinking*
- ➔ *Lab notebook/focused notes and career journal*
- ➔ *Assessment of Unit Knowledge and Skills- Examples for Targeted Data Collection*
  - ◆ *Checks for understanding (exit slips, quickwrites, etc.) aligned to unit guiding questions/activities objectives*
  - ◆ *Lab investigation tasks and analysis questions*
  - ◆ *Assess section and unit concepts including vocabulary terms on summative assessment via test and project*
- ➔ *Extensions & College/Career Readiness may include:*
  - ◆ Career Journal
  - ◆ Guest speakers

*The above is not an exhaustive list but shows the possible strategies & tasks that provide meaningful student evidence of learning.*

## UNIT 4: *Innovation, Inc.*

*Welcome to PLTW Innovation, Inc. – an incubator for innovation where some of the best minds in science and engineering endeavor to solve some of the world's most pressing biomedical challenges. Students tour Innovation, Inc. labs and engage in experiences designed to: a.) build their engineering and experimental design process skills, b.) challenge them to design solutions to current and emerging issues both on and off this world, c.) tangibly highlight that solutions to biomedical science problems rely on collaboration between professions, d.) build their computer science skills by using computer aided design (CAD) and geographic information system (GIS) to innovate the future of medicine, and e.) explore career fields on the forefront of medicine.*

## UNIT 4 DESIRED RESULTS

**ESSENTIAL QUESTION:**

- ➔ *How do the engineering and experimental design processes enable innovation?*
- ➔ *Who innovates, and why?*
- ➔ *What is the process for innovation and what personal characteristics are required for success?*
- ➔ *How do innovations impact and advance human health?*
- ➔ *How does technology function as a vehicle for innovation?*
- ➔ *In what ways do different types of scientists and engineers collaborate in the biomedical sciences field?*
- ➔ *What are potential untapped resources that could work to advance the field of biomedical sciences?*

**UNIT PRIORITY STANDARDS:** *Students will know and be able to…*

| *Cross Cutting Concepts* | *Science & Engineering Practices (SEP)* | *Disciplinary Core Idea (DCI)* |
|---|---|---|
| ➔ Standard SCI.CC1 - Patterns<br>➔ Standard SCI.CC2 - Cause and Effect<br>➔ Standard SCI.CC3 - Scale, Proportion, and Quantity<br>➔ Standard SCI.CC4 - Systems and System Models<br>➔ Standard SCI.CC7 - Stability and Change<br>➔ Standard SCI.CC6 - Structure and Function | ➔ Standard SCI.SEP1 - .Asking Questions<br>➔ Standard SCI.SEP2 - Developing and Using Models<br>➔ Standard SCI.SEP3 - Planning and Conducting Investigations<br>➔ Standard SCI.SEP4 - Analyze and Interpret Data<br>➔ Standard SCI.SEP6 - .Construct Explanations<br>➔ Standard SCI.SEP7 - Engage in Arguments<br>➔ Standard SCI.SEP8 - Obtain, evaluate, and Communication Information | ➔ Systems of specialized cells within organisms help them perform the essential functions of life.<br>➔ All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.<br>➔ Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.<br>➔ Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, overexploitation, and |

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| | | climate change—can disrupt an ecosystem and threaten the survival of some species<br>➔ Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value |

LEARNING TARGETS

***Career Readiness:***

CAR-A Explain the education and skills required for biomedical science professionals.

CAR-B Describe the societal impact of biomedical science professionals.

***Communication:***

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CME-B Synthesize complex medical information to diagnose a disease, disorder, or injury or to determine cause of death.

CME-C Respond to patient and/or community needs and propose treatment strategies for disease, disorder, injury, or the prevention thereof.

## UNIT 4 ASSESSMENT EVIDENCE

*Performance is evaluated in terms of… Students will show their learning by…*

***Performance Task Description(s):***

- ➔ Activities of 4.1: "Designing the Future" - Students will tour labs in the company, each dedicated to a different area of research, innovation, and design. They will investigate innovation in medical device development for testing of cardiac stents. They will explore how computer-aided design (CAD) can be used for modeling and prototyping in innovation. Students will explore innovation in drug delivery as they design and test the formulation for a new drug.
- ➔ Activities of 4.2: "New Frontier" - Students will explore how the body reacts to travel to and life in space.
- ➔ Activities of 4.3: "Invitation to Innovation" - Students are tasked to compete for a new lab space at the company.

***Success Criteria Rubrics***

- ➔ Standards-aligned rubrics are used for communicating the success criteria, goal setting, reflecting during & after the unit learning, and feedback. (Rubric links- TBD)

***Key Feedback & Assessment Strategies*** *(What are different ways students can demonstrate their learning?)**:***

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- ➔ *Extensions & College/Career Readiness may include:*
  - ◆ Career Journal
  - ◆ Guest speakers

*The above is not an exhaustive list but shows the possible strategies & tasks that provide meaningful student evidence of learning.*

## STAGE 3: UNIT LEARNING PLAN (under construction- note: this section does not require board approval)

*Planned learning experiences and instruction: Learner Readiness, Key vocab, materials & resources unique to the unit*

***Plan & Prep for the Unit Stage:***

| | | |
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| Review Learners' Attributes and needs:<br>• Review 504s & IEP at a Glance<br>• Review current classroom data (by standard)<br>• Review any ACT, screening, or diagnostic data<br>• Other? | Send Family Unit Communication<br>☐ *ADD example link* | Review any previous student exemplars<br>Proficient<br>☐ *ADD LINK*<br>Advanced/Excellent<br>☐ *ADD LINK* |

| *Implementation Stage:* | | | |
|---|---|---|---|
| **Key Unit Vocabulary/ Root words:** | | | |
| **Recommended Pacing for Lesson/ Week** | **Learning Target (s)** | **Differentiation** | **Teacher Resources:** |
| *LESSON 1, WEEK 1*<br>*Add more rows as needed* | | Multiple Means for Students to Access Content:<br>• .<br>• .<br>Multiple Modes for Students to Express Understanding<br>• | • *Example- Africa Storyline Calendar w/key videos, data sets & activities* |
| *LESSON 2, WEEK 2*<br>*Add more rows as needed* | | Multiple Means for Students to Access Content:<br>• .<br>• .<br>Multiple Modes for Students to Express Understanding | • |

***End of Unit Reflection:***

- What successes did we have with students learning our desired results (Enduring Understandings, Essential Questions, Priority Standards)? How do we know? (summative results? Progress monitoring data?)
- What opportunities do we have to leverage desired results (Enduring Understandings, Essential Questions, Priority Standards, Anchor Phenomenon) in the future?
- How are we celebrating with students and as a team?

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|---|---|
| 24/25 | • |
| 25/26 | • |
| 26/27 | • |
| 27/28 | • |