

Alignment to Texas Essential Knowledge and Skills

Heart of the Matter

Lesson focuses on the engineering and operation of artificial heart valves, and the interface between man and machine.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	IPC	Biology
Strand: Scientific Investigation and Reasoning							
1.A Demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations including observing a schoolyard habitat.	1.A Demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations.	1.A Demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations.	1.A Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.	1.A Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.	1.A Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.	1.A Demonstrate safe practices during laboratory and field investigations.	1.A Demonstrates safe practices during laboratory and field investigations.
1.B Make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics.	1.B Make informed choices in the use and conservation of natural resources and reusing and recycling of materials such as paper, aluminum, glass, cans and plastic.	1.B Make informed choices in the conservation, disposal, and recycling of materials.	1.B Practice appropriate use and conservation of resources including disposal, reuse, or recycling of materials.	1.B Practice appropriate use and conservation of resources including disposal, reuse, or recycling of materials.	1.B Practice appropriate use and conservation of resources including disposal, reuse, or recycling of materials.	1.B Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.	1.B Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.
2.A Plan and implement descriptive investigations including asking and answering questions, making inferences, and selecting and using equipment or technology needed to solve a specific problem in the natural world.	2.A Plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.	2.A Describe, plan and implement simple experimental investigations testing one variable.	2.A Plan and implement comparative and descriptive investigations by making observations, asking well- defined questions, and using appropriate equipment and technology.	2.A Plan and implement comparative and descriptive investigations by making observations, asking well- defined questions and using appropriate equipment and technology.	2.A Plan and implement comparative and descriptive investigations by making observations, asking well- defined questions, and selecting and using appropriate equipment and technology.	2.B Plan and implement investigate procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology.	2.E Plan and implement descriptive, comparative and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology.
		2.B Ask well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology.	2.B Design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses,	2.B Design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses,	2.B Design and implement comparative and experimental investigations by making observations, asking well-defined questions, formulating		

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			and using appropriate equipment and technology.	and using appropriate equipment and technology.	testable hypotheses and selecting and using appropriate equipment and technology.		
2.B Collect data by observing and measuring using the metric system and recognize differences between observed and measured data.	2.B Collect and record data by observing and measuring, using the metric system, and using descriptive words and numerals, such as labeled drawings, writing, and concept maps.	2.C Collect information by detailed observations and accurate measuring.	2.C Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers.	2.C Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers.	2.C Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers.	2.C Collect data and make measurements with precision.	2.F Collect and organize qualitative and quantitative data, and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams or samples of biological specimens or structures.
2.C Construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current	2.C Construct simple tables, charts, bar graphs, and maps using tools and current	2.G Construct appropriate simple graphs, tables, maps, and charts using technology	2.D Construct tables, using repeated trials and means to organize data and identify patterns.	2.D Construct tables and graphs, using repeated trials and means to organize data and identify	2.D Construct tables and graphs, using repeated trials and means, to organize data and identify		

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technology to organize, examine, and evaluate measured data.	technology to organize, examine, and evaluate data.	including computers to organize, examine, and evaluate information.		patterns.	patterns.		
2.D Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.	2.D Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.	2.D Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.	2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.	2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.	2.E Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.	2.D Organize, analyze, evaluate, make inferences, and predict trends from data.	2.G Analyze, evaluate, make inferences, and predict trends from data.
2.E Demonstrate that repeated investigations may increase the reliability of results.	2.E Perform repeated investigations to increase the reliability of results.	2.E Demonstrate that repeated investigations may increase the reliability of results.					
2.F Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.	2.F Communicate valid, oral and written results supported by data.	2.F Communicate valid conclusions in both written and verbal forms.				2.E Communicate valid conclusions.	2.H Communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology based reports.
		3.C Draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works.	3.B Use models to represent aspects of the natural world such as a model of Earth's layers.	3.B Use models to represent aspects of the natural world such as human body systems, and plant and animal cells.	3.B Use models to represent aspects of the natural world such as an atom, a molecule, space or a geologic feature.		3.E Evaluate models according to their limitations in representing biological objects or events.
3.D Connect grade level appropriate science concepts with the history of science, science careers and contributions of scientists.	3.D Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.	3.D Connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.	3.D Relate the impact of research on scientific thought and society including the history of science and contributions of scientists as related to the content.	3.D Relate the impact of research on scientific thought and society, including history of science and contributions of scientists as related to the content.	3.D Relate the impact of research on scientific thought and society including the history of science and contributions of scientists as related to the content.	3.D Evaluate the impact of research on scientific thought, society, and the environment.	3.F Research and describe the history of biology and contributions of scientists.



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						3.E Describe connections between physics and chemistry and future careers.	
Strand: Force, Motion and Energy							
6.B Demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons.	6.D Design an experiment to test the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.	6.D Design an experiment that tests the effect of force on an object.	8.B Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.	7.B Illustrate the transformation of energy within an organism such as the transfer from chemical energy to heat and thermal energy in digestion.	6.A Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.	4.A Describe and calculate an object's motion in terms of position, displacement, speed and acceleration.	
6.C Observe forces such as magnetism and gravity acting on objects.				7.C Demonstrate and illustrate forces that affect motion in everyday life, such as emergence of seedlings, turgor pressure, and geotropism.		5.A Recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms, water flowing down a stream moving pebbles, and bowling balls knocking down pins.	
Strand: Organisms and Environments							
10.A Explore how structures and functions of plants and animals allow them to survive in a particular environment.		10.A Compare the structures and functions of different species that help them live and survive such as hooves on prairie animals or webbed feet in aquatic animals.		12.A Investigate and explain how internal structures of organisms have adaptations that allow specific functions, such as gills in fish, hollow bones in birds, or xylem in plants.			10.A Describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals.
				12.B Identify the main functions of the systems of the human organism including the circulatory, respiratory, skeletal, muscular, digestive,			10.C Analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.



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				excretory, reproductive, integumentary, nervous, and endocrine systems.			
				12.C Recognize levels of organization in plants and animals including cells, tissues, organs, organ systems, and organisms.			11.A Describe the role of internal feedback mechanisms in the maintenance of homeostasis.
				13.B Describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance.			