Subject	Chapter 112. Science			
Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(a) General requirements. Students shall be awarded one credit for successful completion of this course. Prerequisites: none. This course is recommended for students in Grade 9 or 10.				
(b) Introduction.				
(1) Integrated Physics and Chemistry. In Integrated Physics and Chemistry, students conduct laboratory and field investigations, use scientific methods during investigation, and make informed decisions using critical thinking and scientific problem solving. This course integrates the disciplines of physics and chemistry in the following topics: force, motion, energy, and matter.				
(2) Nature of science. Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process." This vast body of changing and increasing knowledge is described by physical, mathematical, and conceptual models. Students should know that some questions are outside the realm of science because they deal with phenomena that are not scientifically testable.				
(3) Scientific inquiry. Scientific inquiry is the planned and deliberate investigation of the natural world. Scientific methods of investigation are experimental, descriptive, or comparative. The method chosen should be appropriate to the question being asked.				
(4) Science and social ethics. Scientific decision making is a way of answering questions about the natural world. Students should be able to distinguish between scientific decision-making methods (scientific methods) and ethical and social decisions that involve science (the application of scientific information).				
(5) Science, systems, and models. A system is a collection of cycles, structures, and processes that interact. All systems have basic properties that can be described in space, time, energy, and matter. Change and constancy occur in systems as patterns and can be observed, measured, and modeled. These patterns help to make predictions that can be scientifically tested. Students should analyze a system in terms of its components and how these components relate to each other, to the whole, and to the external environment.				
(C) Knowledge and skills.				
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:	(A) demonstrate safe practices during laboratory and field investigations	(i) demonstrate safe practices during laboratory investigations		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:	(A) demonstrate safe practices during laboratory and field investigations	(ii) demonstrate safe practices during field investigations		
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:	(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials	(i) demonstrate an understanding of the use of resources		
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:	(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials	(ii) demonstrate an understanding of the conservation of resources		
(1) Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:	(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials	(iii) demonstrate the proper disposal or recycling of materials		

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TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section	(i) know the definition of science, as specified in subsection (b)(2) [above]		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(A) know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section	(ii) understand that [science] has limitations, as specified in subsection (b)(2) [above]		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(i) plan investigative procedures, including asking questions		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(ii) plan investigative procedures, including formulating testable hypotheses		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(iii) plan investigative procedures, including selecting equipment		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(iv) plan investigative procedures, including selecting technology		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(v) implement investigative procedures, including asking questions		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(vi) implement investigative procedures, including formulating testable hypotheses		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(vii) implement investigative procedures, including selecting equipment		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(B) plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology	(viii) implement investigative procedures, including selecting technology		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(C) collect data and make measurements with precision	(i) collect data		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(C) collect data and make measurements with precision	(ii) make measurements with precision		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(D) organize, analyze, evaluate, make inferences, and predict trends from data	(i) organize data		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(D) organize, analyze, evaluate, make inferences, and predict trends from data	(ii) analyze data		

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(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(D) organize, analyze, evaluate, make inferences, and predict trends from data	(iii) evaluate data		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(D) organize, analyze, evaluate, make inferences, and predict trends from data	(iv) make inferences from data		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(D) organize, analyze, evaluate, make inferences, and predict trends from data	(v) predict trends from data		
(2) Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to:	(E) communicate valid conclusions			
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(i) in all fields of science, analyze scientific explanations by using empirical evidence		

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(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(ii) in all fields of science, analyze scientific explanations by using logical reasoning		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(iii) in all fields of science, analyze scientific explanations by using experimental testing		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(iv) in all fields of science, analyze scientific explanations by using observational testing		

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TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(v) in all fields of science, analyze scientific explanations, including examining all sides of scientific evidence of those scientific explanations		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(vi) in all fields of science, evaluate scientific explanations by using empirical evidence		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(vii) in all fields of science, evaluate scientific explanations by using logical reasoning		

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(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(viii) in all fields of science, evaluate scientific explanations by using experimental testing		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(ix) in all fields of science, evaluate scientific explanations by using observational testing		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(x) in all fields of science, evaluate scientific explanations, including examining all sides of scientific evidence of those scientific explanations		

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(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(xi) in all fields of science, critique scientific explanations by using empirical evidence		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(xii) in all fields of science, critique scientific explanations by using logical reasoning		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(xiii) in all fields of science, critique scientific explanations by using experimental testing		

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TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(xiv) in all fields of science, critique scientific explanations by using observational testing		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student	(xv) in all fields of science, critique scientific explanations, including examining all sides of scientific evidence of those scientific explanations		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(B) communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials	(i) communicate scientific information extracted from various sources		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(B) communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials	(ii) apply scientific information extracted from various sources		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(C) draw inferences based on data related to promotional materials for products and services	(i) draw inferences based on data related to promotional materials for products		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(C) draw inferences based on data related to promotional materials for products and services	(ii) draw inferences based on data related to promotional materials for services		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(D) evaluate the impact of research on scientific thought, society, and the environment	(i) evaluate the impact of research on scientific thought		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(D) evaluate the impact of research on scientific thought, society, and the environment	(ii) evaluate the impact of research on society		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(D) evaluate the impact of research on scientific thought, society, and the environment	(iii) evaluate the impact of research on the environment		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(E) describe connections between physics and chemistry and future careers	(i) describe connections between physics and future careers		

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(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(E) describe connections between physics and chemistry and future careers	(ii) describe connections between chemistry and future careers		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(i) research the history of physics		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(ii) research the history of chemistry		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(iii) research contributions of scientists		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(iv) describe the history of physics		
(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(v) describe the history of chemistry		

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(3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions. The student is expected to:	(F) research and describe the history of physics and chemistry and contributions of scientists	(vi) describe the contributions of scientists		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(i) describe an object's motion in terms of position		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(ii) describe an object's motion in terms of displacement		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(iii) describe an object's motion in terms of speed		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(iv) describe an object's motion in terms of acceleration		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(v) calculate an object's motion in terms of position		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(vi) calculate an object's motion in terms of displacement		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(vii) calculate an object's motion in terms of speed		

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(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(A) describe and calculate an object's motion in terms of position, displacement, speed, and acceleration	(viii) calculate an object's motion in terms of acceleration		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(B) measure and graph distance and speed as a function of time using moving toys	(i) measure distance and speed as a function of time using moving toys		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(B) measure and graph distance and speed as a function of time using moving toys	(ii) graph distance and speed as a function of time using moving toys		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(C) investigate how an object's motion changes only when a net force is applied, including activities and equipment such as toy cars, vehicle restraints, sports activities, and classroom objects	(i) investigate how an object's motion changes only when a net force is applied, including [various] activities		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(C) investigate how an object's motion changes only when a net force is applied, including activities and equipment such as toy cars, vehicle restraints, sports activities, and classroom objects	(ii) investigate how an object's motion changes only when a net force is applied, including [various] equipment		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(D) assess the relationship between force, mass, and acceleration, noting the relationship is independent of the nature of the force, using equipment such as dynamic carts, moving toys, vehicles, and falling objects	(i) assess the relationship between force, mass, and acceleration, noting the relationship is independent of the nature of the force, using [various] equipment		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(E) apply the concept of conservation of momentum using action and reaction forces such as students on skateboards	(i) apply the concept of conservation of momentum using action and reaction forces		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(F) describe the gravitational attraction between objects of different masses at different distances, including satellites			
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(G) examine electrical force as a universal force between any two charged objects and compare the relative strength of the electrical force and gravitational force	(i) examine electrical force as a universal force between any two charged objects		
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:	(G) examine electrical force as a universal force between any two charged objects and compare the relative strength of the electrical force and gravitational force	(ii) compare the relative strength of the electrical force and gravitational force		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(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	(i) recognize that objects in motion have kinetic energy		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(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	(ii) recognize that substances in motion have kinetic energy		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(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	(iii) demonstrate that objects in motion have kinetic energy		

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(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(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	(iv) demonstrate that substances in motion have kinetic energy		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(B) demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries	(i) demonstrate common forms of potential energy, including gravitational		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(B) demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries	(ii) demonstrate common forms of potential energy, including elastic		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(B) demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries	(iii) demonstrate common forms of potential energy, including chemical		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(C) demonstrate that moving electric charges produce magnetic forces and moving magnets produce electric forces	(i) demonstrate that moving electric charges produce magnetic forces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(C) demonstrate that moving electric charges produce magnetic forces and moving magnets produce electric forces	(ii) demonstrate that moving magnets produce electric forces		

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(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(D) investigate the law of conservation of energy			
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(i) investigate the movement of thermal energy through solids by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(ii) investigate the movement of thermal energy through solids by radiation		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(iii) investigate the movement of thermal energy through liquids by convection		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(iv) investigate the movement of thermal energy through liquids by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(v) investigate the movement of thermal energy through liquids by radiation		

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(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(vi) investigate the movement of thermal energy through gases by convection		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(vii) investigate the movement of thermal energy through gases by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(viii) investigate the movement of thermal energy through gases by radiation		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(ix) demonstrate the movement of thermal energy through solids by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(x) demonstrate the movement of thermal energy through solids by radiation		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xi) demonstrate the movement of thermal energy through liquids by convection		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xii) demonstrate the movement of thermal energy through liquids by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xiii) demonstrate the movement of thermal energy through liquids by radiation		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xiv) demonstrate the movement of thermal energy through gases by convection		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xv) demonstrate the movement of thermal energy through gases by conduction		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(E) investigate and demonstrate the movement of thermal energy through solids, liquids, and gases by convection, conduction, and radiation such as in weather, living, and mechanical systems	(xvi) demonstrate the movement of thermal energy through gases by radiation		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(F) evaluate the transfer of electrical energy in series and parallel circuits and conductive materials	(i) evaluate the transfer of electrical energy in series circuits		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(F) evaluate the transfer of electrical energy in series and parallel circuits and conductive materials	(ii) evaluate the transfer of electrical energy in parallel circuits		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(F) evaluate the transfer of electrical energy in series and parallel circuits and conductive materials	(iii) evaluate the transfer of electrical energy in conductive materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(i) explore the characteristics of energy transferred by waves, including acoustic, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(ii) explore the characteristics of energy transferred by waves, including acoustic, as they bend around corners		

Subject	Chapter 112. Science			
Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(iii) explore the characteristics of energy transferred by waves, including acoustic, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(iv) explore the characteristics of energy transferred by waves, including acoustic, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(v) explore the characteristics of energy transferred by waves, including acoustic, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(vi) explore the characteristics of energy transferred by waves, including seismic, as they superpose on one another		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(vii) explore the characteristics of energy transferred by waves, including seismic, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(viii) explore the characteristics of energy transferred by waves, including seismic, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(ix) explore the characteristics of energy transferred by waves, including seismic, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(x) explore the characteristics of energy transferred by waves, including seismic, as they change direction when entering new materials		

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Course Title	**§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).**			
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xi) explore the characteristics of energy transferred by waves, including light, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xii) explore the characteristics of energy transferred by waves, including light, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xiii) explore the characteristics of energy transferred by waves, including light, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xiv) explore the characteristics of energy transferred by waves, including light, as they are absorbed by materials		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xv) explore the characteristics of energy transferred by waves, including light, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xvi) explore the characteristics of energy transferred by waves, including waves on water, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xvii) explore the characteristics of energy transferred by waves, including waves on water, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xviii) explore the characteristics of energy transferred by waves, including waves on water, as they reflect off surfaces		

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Course Title	**§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).**			
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xix) explore the characteristics of energy transferred by waves, including waves on water, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xx) explore the characteristics of energy transferred by waves, including waves on water, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxi) explore the behaviors of energy transferred by waves, including acoustic, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxii) explore the behaviors of energy transferred by waves, including acoustic, as they bend around corners		

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Course Title	**§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).**			
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxiii) explore the behaviors of energy transferred by waves, including acoustic, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxiv) explore the behaviors of energy transferred by waves, including acoustic, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxv) explore the behaviors of energy transferred by waves, including acoustic, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxvi) explore behaviors of energy transferred by waves, including seismic, as they superpose on one another		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxvii) explore behaviors of energy transferred by waves, including seismic, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxviii) explore the behaviors of energy transferred by waves, including seismic, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxix) explore the behaviors of energy transferred by waves, including seismic, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxx) explore the behaviors of energy transferred by waves, including seismic, as they change direction when entering new materials		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxi) explore the behaviors of energy transferred by waves, including light, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxii) explore the behaviors of energy transferred by waves, including light, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxiii) explore the behaviors of energy transferred by waves, including light, as they reflect off surfaces		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxiv) explore the behaviors of energy transferred by waves, including light, as they are absorbed by materials		

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TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxv) explore the behaviors of energy transferred by waves, including light, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxvi) explore the behaviors of energy transferred by waves, including waves on water, as they superpose on one another		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxvii) explore the behaviors of energy transferred by waves, including waves on water, as they bend around corners		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxviii) explore behaviors of energy transferred by waves, including waves on water, as they reflect off surfaces		

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Course Title	**§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).**			
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xxxix) explore the behaviors of energy transferred by waves, including waves on water, as they are absorbed by materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(G) explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials	(xl) explore the behaviors of energy transferred by waves, including waves on water, as they change direction when entering new materials		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(H) analyze energy conversions such as those from radiant, nuclear, and geothermal sources; fossil fuels such as coal, gas, oil; and the movement of water or wind	(i) analyze energy conversions		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(H) analyze energy conversions such as those from radiant, nuclear, and geothermal sources; fossil fuels such as coal, gas, oil; and the movement of water or wind	(ii) analyze fossil fuels		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(H) analyze energy conversions such as those from radiant, nuclear, and geothermal sources; fossil fuels such as coal, gas, oil; and the movement of water or wind	(iii) analyze the movement of water or wind		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(I) critique the advantages and disadvantages of various energy sources and their impact on society and the environment	(i) critique the advantages of various energy sources		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(I) critique the advantages and disadvantages of various energy sources and their impact on society and the environment	(ii) critique the disadvantages of various energy sources		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(I) critique the advantages and disadvantages of various energy sources and their impact on society and the environment	(iii) critique the impact [of various energy sources] on society		
(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:	(I) critique the advantages and disadvantages of various energy sources and their impact on society and the environment	(iv) critique the impact [of various energy sources] on the environment		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(i) examine differences in physical properties of solids as explained by the arrangement of atoms, ions, or molecules of the substances		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(ii) examine differences in physical properties of liquids as explained by the arrangement of atoms, ions, or molecules of the substances		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(iii) examine differences in physical properties of gases as explained by the arrangement of atoms, ions, or molecules of the substances		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(iv) examine differences in physical properties of solids as explained by the motion of atoms, ions, or molecules of the substances		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(v) examine differences in physical properties of liquids as explained by the motion of atoms, ions, or molecules of the substances		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(vi) examine differences in physical properties of gases as explained by the motion of atoms, ions, or molecules of the substances		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(vii) examine the strength of the forces of attraction between [solid] particles		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(viii) examine the strength of the forces of attraction between [liquid] particles		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(A) examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms, ions, or molecules of the substances and the strength of the forces of attraction between those particles	(ix) examine the strength of the forces of attraction between [gas] particles		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(B) relate chemical properties of substances to the arrangement of their atoms or molecules			
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(C) analyze physical and chemical properties of elements and compounds such as color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity	(i) analyze physical properties of elements		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(C) analyze physical and chemical properties of elements and compounds such as color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity	(ii) analyze physical properties of compounds		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(C) analyze physical and chemical properties of elements and compounds such as color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity	(iii) analyze chemical properties of elements		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(C) analyze physical and chemical properties of elements and compounds such as color, density, viscosity, buoyancy, boiling point, freezing point, conductivity, and reactivity	(iv) analyze chemical properties of compounds		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(D) relate the physical and chemical behavior of an element, including bonding and classification, to its placement on the Periodic Table	(i) relate the physical behavior of an element to its placement on the Periodic Table		

Subject	Chapter 112. Science			
Course Title	**§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).**			
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**	**Element**	**Subelement**
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(D) relate the physical and chemical behavior of an element, including bonding and classification, to its placement on the Periodic Table	(ii) relate the chemical behavior of an element, including bonding, to its placement on the Periodic Table		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(i) relate the structure of water to its function as a solvent		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(ii) investigate the properties of solutions		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(iii) investigate the factors affecting gas solubility, including nature of solute		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(iv) investigate the factors affecting gas solubility, including temperature		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(v) investigate the factors affecting gas solubility, including pressure		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(vi) investigate the factors affecting gas solubility, including pH		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(vii) investigate the factors affecting gas solubility, including concentration		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(viii) investigate the factors affecting solid solubility, including nature of solute		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(ix) investigate the factors affecting solid solubility, including temperature		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(x) investigate the factors affecting solid solubility, including pH		
(6) Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:	(E) relate the structure of water to its function as a solvent and investigate the properties of solutions and factors affecting gas and solid solubility, including nature of solute, temperature, pressure, pH, and concentration	(xi) investigate the factors affecting solid solubility, including concentration		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(A) investigate changes of state as it relates to the arrangement of particles of matter and energy transfer	(i) investigate changes of state as it relates to the arrangement of particles of matter		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(A) investigate changes of state as it relates to the arrangement of particles of matter and energy transfer	(ii) investigate changes of state as it relates to energy transfer		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(B) recognize that chemical changes can occur when substances react to form different substances and that these interactions are largely determined by the valence electrons	(i) recognize that chemical changes can occur when substances react to form different substances		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(B) recognize that chemical changes can occur when substances react to form different substances and that these interactions are largely determined by the valence electrons	(ii) recognize that these interactions are largely determined by the valence electrons		

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Course Title	§112.38. Integrated Physics and Chemistry, Beginning with School Year 2010-2011 (One Credit).			
TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(C) demonstrate that mass is conserved when substances undergo chemical change and that the number and kind of atoms are the same in the reactants and products	(i) demonstrate that mass is conserved when substances undergo chemical change		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(C) demonstrate that mass is conserved when substances undergo chemical change and that the number and kind of atoms are the same in the reactants and products	(ii) demonstrate that the number of atoms [is] the same in the reactants and products [when substances undergo chemical change]		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(C) demonstrate that mass is conserved when substances undergo chemical change and that the number and kind of atoms are the same in the reactants and products	(iii) demonstrate that the kind of atoms [is] the same in the reactants and products [when substances undergo chemical change]		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(D) analyze energy changes that accompany chemical reactions such as those occurring in heat packs, cold packs, and glow sticks and classify them as exothermic or endothermic reactions	(i) analyze energy changes that accompany chemical reactions		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(D) analyze energy changes that accompany chemical reactions such as those occurring in heat packs, cold packs, and glow sticks and classify them as exothermic or endothermic reactions	(ii) classify [energy changes] as exothermic or endothermic reactions		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(E) describe types of nuclear reactions such as fission and fusion and their roles in applications such as medicine and energy production	(i) describe types of nuclear reactions		

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TEKS (Knowledge and Skills)	Student Expectation	Breakout	Element	Subelement
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(E) describe types of nuclear reactions such as fission and fusion and their roles in applications such as medicine and energy production	(ii) describe [the] role [of nuclear reactions] in applications		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(F) research and describe the environmental and economic impact of the end-products of chemical reactions such as those that may result in acid rain, degradation of water and air quality, and ozone depletion	(i) research the environmental impact of the end-products of chemical reactions		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(F) research and describe the environmental and economic impact of the end-products of chemical reactions such as those that may result in acid rain, degradation of water and air quality, and ozone depletion	(ii) research the economic impact of the end-products of chemical reactions		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(F) research and describe the environmental and economic impact of the end-products of chemical reactions such as those that may result in acid rain, degradation of water and air quality, and ozone depletion	(iii) describe the environmental impact of the end-products of chemical reactions		
(7) Science concepts. The student knows that changes in matter affect everyday life. The student is expected to:	(F) research and describe the environmental and economic impact of the end-products of chemical reactions such as those that may result in acid rain, degradation of water and air quality, and ozone depletion	(iv) describe the economic impact of the end-products of chemical reactions		
Source: The provisions of this §112.34 adopted to be effective August 4, 2009, 34 TexReg 5063.				