| Subject | Chapter 112. Science | | | |
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| **Course Title** | **§112.39. Physics, 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. Algebra I is suggested as a prerequisite or co-requisite. This course is recommended for students in Grade 9, 10, 11, or 12. | | | | |
| **(b) Introduction.** | | | | |
| (1) Physics. In Physics, students conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students study a variety of topics that include: laws of motion changes within physical systems and conservation of energy and momentum; forces; thermodynamics; characteristics and behavior of waves; and atomic, nuclear, and quantum physics. Students who successfully complete Physics will acquire factual knowledge within a conceptual framework, practice experimental design and interpretation, work collaboratively with colleagues, and develop critical thinking skills. | | | | |
| (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 can be 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 and ethical and social decisions that involve the application of scientific information. | | | | |
| (5) Scientific systems. A system is a collection of cycles, structures, and processes that interact. All systems have basic properties that can be described in terms of 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 conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. 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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| (1) Scientific processes. The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. 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 conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. 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 conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. 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 | | |

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| (1) Scientific processes. The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. 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 an understanding of the proper disposal or recycling of materials | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. 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 a systematic approach to answer scientific laboratory and field investigative questions. 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 a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (B) know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories | (i) know that hypotheses are tentative statements that must be capable of being supported or not supported by observational evidence | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (B) know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories | (ii) know that hypotheses are testable statements that must be capable of being supported or not supported by observational evidence | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (C) know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed | (i) know that scientific theories are based on natural and physical phenomena | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (C) know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed | (ii) know that scientific theories are capable of being tested by multiple independent researchers | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (C) know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed | (iii) [know that], unlike hypotheses, scientific theories are well-established explanations | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (C) know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed | (v) [know that] scientific theories may be subject to change as new areas of science are developed | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (C) know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed | (vi) [know that] scientific theories may be subject to change as new technologies are developed | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (D) distinguish between scientific hypotheses and scientific theories | | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (i) design investigative procedures, including making observations | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (ii) design investigative procedures, including asking well-defined questions | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (iii) design investigative procedures, including formulating testable hypotheses | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (iv) design investigative procedures, including identifying variables | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (v) design investigative procedures, including selecting appropriate equipment | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (vii) design investigative procedures, including evaluating numerical answers for reasonableness | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (viii) implement investigative procedures, including making observations | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (ix) implement investigative procedures, including asking well-defined questions | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (x) implement investigative procedures, including formulating testable hypotheses | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (xi) implement investigative procedures, including identifying variables | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (xii) implement investigative procedures, including selecting appropriate equipment | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (E) design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness | (xiii) implement investigative procedures, including selecting appropriate technology | | |
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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (i) demonstrate the use of course apparatus [and] equipment, including multimeters (current, voltage, resistance) | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (v) demonstrate the use of course apparatus [and] equipment, including dynamics demonstration equipment | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (vi) demonstrate the use of course apparatus [and] equipment, including collision apparatus | | |

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| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (viii) demonstrate the use of course apparatus [and] equipment, including discharge tubes with power supply (H, He, Ne, Ar) | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xi) demonstrate the use of course apparatus [and] equipment, including slotted lab masses | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xii) demonstrate the use of course apparatus [and] equipment, including hooked lab masses | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xiii) demonstrate the use of course apparatus [and] equipment, including bar magnets | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xiv) demonstrate the use of course apparatus [and] equipment, including horseshoe magnets | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xv) demonstrate the use of course apparatus [and] equipment, including plane mirrors | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xvi) demonstrate the use of course apparatus [and] equipment, including convex lenses | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xvii) demonstrate the use of course apparatus [and] equipment, including pendulum support | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xviii) demonstrate the use of course apparatus [and] equipment, including power supply | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xix) demonstrate the use of course apparatus [and] equipment, including ring clamps | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xx) demonstrate the use of course apparatus [and] equipment, including ring stands | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxi) demonstrate the use of course apparatus [and] equipment, including stopwatches | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxii) demonstrate the use of course apparatus [and] equipment, including trajectory apparatus | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxiii) demonstrate the use of course apparatus [and] equipment, including tuning forks | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxiv) demonstrate the use of course apparatus [and] equipment, including carbon paper | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxv) demonstrate the use of course apparatus [and] equipment, including graph paper | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxvi) demonstrate the use of course apparatus [and] equipment, including magnetic compasses | | |

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|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxvii) demonstrate the use of course apparatus [and] equipment, including polarized film | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxviii) demonstrate the use of course apparatus [and] equipment, including prisms | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxix) demonstrate the use of course apparatus [and] equipment, including protractors | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxx) demonstrate the use of course apparatus [and] equipment, including resistors | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxi) demonstrate the use of course apparatus [and] equipment, including friction blocks | | |

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|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxii) demonstrate the use of course apparatus [and] equipment, including mini lamps (bulbs) and sockets | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxiii) demonstrate the use of course apparatus [and] equipment, including electrostatics kits | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxiv) demonstrate the use of course apparatus [and] equipment, including 90-degree rod clamps | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxv) demonstrate the use of course apparatus [and] equipment, including metric rulers | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxvi) demonstrate the use of course apparatus [and] equipment, including spring scales | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxvii) demonstrate the use of course apparatus [and] equipment, including knife blade switches | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxviii) demonstrate the use of course apparatus [and] equipment, including Celsius thermometers | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xxxix) demonstrate the use of course apparatus [and] equipment, including meter sticks | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xl) demonstrate the use of course apparatus [and] equipment, including scientific calculators | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xli) demonstrate the use of course apparatus [and] equipment, including graphing technology | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlii) demonstrate the use of course apparatus [and] equipment, including computers | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xliii) demonstrate the use of course apparatus [and] equipment, including cathode ray tubes with horseshoe magnets | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xliv) demonstrate the use of course apparatus [and] equipment, including ballistic carts or equivalent | | |

| **Subject** | **Chapter 112. Science** | | | |
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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlv) demonstrate the use of course apparatus [and] equipment, including resonance tubes | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlvi) demonstrate the use of course apparatus [and] equipment, including spools of nylon thread or string | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlvii) demonstrate the use of course apparatus [and] equipment, including containers of iron filings | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlviii) demonstrate the use of course apparatus [and] equipment, including rolls of white craft paper | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (xlix) demonstrate the use of course apparatus [and] equipment, including copper wire | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (I) demonstrate the use of course apparatus [and] equipment, including [the] Periodic Table | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (li) demonstrate the use of course apparatus [and] equipment, including electromagnetic spectrum charts | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (lii) demonstrate the use of course apparatus [and] equipment, including slinky springs | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (liii) demonstrate the use of course apparatus [and] equipment, including wave motion ropes | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (liv) demonstrate the use of course apparatus [and] equipment, including laser pointers | | |

| **Subject** | **Chapter 112. Science** | | | |
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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (Iv) demonstrate the use of course techniques | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (F) demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers | (lvi) demonstrate the use of course procedures | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (G) use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer | (i) use a wide variety of additional course apparatus [and] equipment as appropriate | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (G) use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer | (ii) use a wide variety of additional techniques as appropriate | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (G) use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer | (iii) use a wide variety of additional course materials as appropriate | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (G) use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer | (iv) use a wide variety of additional procedures as appropriate | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (H) make measurements with accuracy and precision and record data using scientific notation and International System (SI) units | (i) make measurements with accuracy | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (H) make measurements with accuracy and precision and record data using scientific notation and International System (SI) units | (ii) make measurements with precision | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (H) make measurements with accuracy and precision and record data using scientific notation and International System (SI) units | (iii) record data using scientific notation | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (H) make measurements with accuracy and precision and record data using scientific notation and International System (SI) units | (iv) record data using International System (SI) units | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (I) identify and quantify causes and effects of uncertainties in measured data | (i) identify causes of uncertainties in measured data | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (I) identify and quantify causes and effects of uncertainties in measured data | (ii) identify effects of uncertainties in measured data | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (I) identify and quantify causes and effects of uncertainties in measured data | (iii) quantify causes of uncertainties in measured data | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (I) identify and quantify causes and effects of uncertainties in measured data | (iv) quantify effects of uncertainties in measured data | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (i) organize data, including the use of tables | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (ii) organize data, including the use of charts | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (iii) organize data, including the use of graphs | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (iv) evaluate data, including the use of tables | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (v) evaluate data, including the use of charts | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (vi) evaluate data, including the use of graphs | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (vii) make inferences from data, including the use of tables | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (viii) make inferences from data, including the use of charts | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (J) organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs | (ix) make inferences from data, including the use of graphs | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (K) communicate valid conclusions supported by the data through various methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports | (i) communicate valid conclusions supported by the data through various methods | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (i) express relationships among physical variables quantitatively, including the use of graphs | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (ii) express relationships among physical variables quantitatively, including the use of charts | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (iii) express relationships among physical variables quantitatively, including the use of equations | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (iv) manipulate relationships among physical variables quantitatively, including the use of graphs | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (v) manipulate relationships among physical variables quantitatively, including the use of charts | | |
| (2) Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: | (L) express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations | (vi) manipulate relationships among physical variables quantitatively, including the use of equations | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 within and outside the classroom. 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 | | |

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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 within and outside the classroom. 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 | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 within and outside the classroom. 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 within and outside the classroom. 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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| 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 within and outside the classroom. 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 within and outside the classroom. 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 within and outside the classroom. 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 | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 | | |

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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 within and outside the classroom. 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 within and outside the classroom. 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 | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 within and outside the classroom. 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 within and outside the classroom. 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 | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| 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 within and outside the classroom. 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 | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. 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 within and outside the classroom. 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 within and outside the classroom. The student is expected to: | (D) explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society | (i) explain the impacts of the scientific contributions of a variety of historical scientists on scientific thought | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (D) explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society | (ii) explain the impacts of the scientific contributions of a variety of historical scientists on society | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (D) explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society | (iii) explain the impacts of the scientific contributions of a variety of contemporary scientists on scientific thought | | |

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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 within and outside the classroom. The student is expected to: | (D) explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society | (iv) explain the impacts of the scientific contributions of a variety of contemporary scientists on society | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (E) research and describe the connections between physics and future careers | (i) research the connections between physics and future careers | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (E) research and describe the connections between physics and future careers | (ii) describe the connections between physics and future careers | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (i) express relationships symbolically in accordance with accepted theories to make predictions mathematically, including problems requiring proportional reasoning | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (ii) express relationships symbolically in accordance with accepted theories to make predictions mathematically, including problems requiring graphical vector addition | | |

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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 within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (iii) express relationships symbolically in accordance with accepted theories to solve problems mathematically, including problems requiring proportional reasoning | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (iv) express relationships symbolically in accordance with accepted theories to solve problems mathematically, including problems requiring graphical vector addition | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (v) interpret relationships symbolically in accordance with accepted theories to make predictions mathematically, including problems requiring proportional reasoning | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (vi) interpret relationships symbolically in accordance with accepted theories to make predictions mathematically, including problems requiring graphical vector addition | | |
| (3) Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (vii) interpret relationships symbolically in accordance with accepted theories to solve problems mathematically, including problems requiring proportional reasoning | | |

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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 within and outside the classroom. The student is expected to: | (F) express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition | (viii) interpret relationships symbolically in accordance with accepted theories to solve problems mathematically, including problems requiring graphical vector addition | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (A) generate and interpret graphs and charts describing different types of motion, including the use of real-time technology such as motion detectors or photogates | (i) generate graphs describing different types of motion, including the use of real-time technology | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (A) generate and interpret graphs and charts describing different types of motion, including the use of real-time technology such as motion detectors or photogates | (ii) generate charts describing different types of motion, including the use of real-time technology | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (A) generate and interpret graphs and charts describing different types of motion, including the use of real-time technology such as motion detectors or photogates | (iii) interpret graphs describing different types of motion, including the use of real-time technology | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (A) generate and interpret graphs and charts describing different types of motion, including the use of real-time technology such as motion detectors or photogates | (iv) interpret charts describing different types of motion, including the use of real-time technology | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (i) describe motion in one dimension using equations with the concept of distance | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (ii) describe motion in one dimension using equations with the concept of displacement | | |

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| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (iii) describe motion in one dimension using equations with the concept of speed | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (iv) describe motion in one dimension using equations with the concept of average velocity | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (v) describe motion in one dimension using equations with the concept of instantaneous velocity | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (vi) describe motion in one dimension using equations with the concept of acceleration | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (vii) analyze motion in one dimension using equations with the concept of distance | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (viii) analyze motion in one dimension using equations with the concept of displacement | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (ix) analyze motion in one dimension using equations with the concept of speed | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (x) analyze motion in one dimension using equations with the concept of average velocity | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (xi) analyze motion in one dimension using equations with the concept of instantaneous velocity | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (B) describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration | (xii) analyze motion in one dimension using equations with the concept of acceleration | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (C) analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples | (i) analyze accelerated motion in two dimensions using equations, including projectile examples | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (C) analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples | (ii) analyze accelerated motion in two dimensions using equations, including circular examples | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (C) analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples | (iii) describe accelerated motion in two dimensions using equations, including projectile examples | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (C) analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples | (iv) describe accelerated motion in two dimensions using equations, including circular examples | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (D) calculate the effect of forces on objects, including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects | (i) calculate the effect of forces on objects, including the law of inertia | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (D) calculate the effect of forces on objects, including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects | (ii) calculate the effect of forces on objects, including the relationship between force and acceleration | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (D) calculate the effect of forces on objects, including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects | (iii) calculate the effect of forces on objects, including the nature of force pairs between objects | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (E) develop and interpret free-body force diagrams | (i) develop free-body force diagrams | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (E) develop and interpret free-body force diagrams | (ii) interpret free-body force diagrams | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (F) identify and describe motion relative to different frames of reference | (i) identify motion relative to different frames of reference | | |
| (4) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: | (F) identify and describe motion relative to different frames of reference | (ii) describe motion relative to different frames of reference | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (i) research the historical development of the concept of gravitational forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (ii) research the historical development of the concept of electromagnetic forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (iii) research the historical development of the concept of weak nuclear forces | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (iv) research the historical development of the concept of strong nuclear forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (v) describe the historical development of the concept of gravitational forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (vi) describe the historical development of the concept of electromagnetic forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (vii) describe the historical development of the concept of weak nuclear forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (A) research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces | (viii) describe the historical development of the concept of strong nuclear forces | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (B) describe and calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers | (i) describe how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (B) describe and calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers | (ii) calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (C) describe and calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them | (i) describe how the magnitude of the electrical force between two objects depends on their charges and the distance between them | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (C) describe and calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them | (ii) calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (D) identify examples of electric and magnetic forces in everyday life | (i) identify examples of electric forces in everyday life | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (D) identify examples of electric and magnetic forces in everyday life | (ii) identify examples of magnetic forces in everyday life | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (E) characterize materials as conductors or insulators based on their electrical properties | | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (i) design electric circuits connected in series combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (ii) design electric circuits connected in parallel combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (iii) construct electric circuits connected in series combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (iv) construct electric circuits connected in parallel combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (v) calculate current through electric circuit elements connected in series combinations | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (vi) calculate potential difference across electric circuit elements connected in series combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (vii) calculate resistance of electric circuit elements connected in series combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (viii) calculate power used by electric circuit elements connected in series combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (ix) calculate current through electric circuit elements connected in parallel combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (x) calculate potential difference across electric circuit elements connected in parallel combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (xi) calculate resistance of electric circuit elements connected in parallel combinations | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (F) design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations | (xii) calculate power used by electric circuit elements connected in parallel combinations | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (G) investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers | (i) investigate the relationship between electric and magnetic fields in applications | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (G) investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers | (ii) describe the relationship between electric and magnetic fields in applications | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (H) describe evidence for and effects of the strong and weak nuclear forces in nature | (i) describe evidence for the strong nuclear forces in nature | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (H) describe evidence for and effects of the strong and weak nuclear forces in nature | (ii) describe evidence for the weak nuclear forces in nature | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (H) describe evidence for and effects of the strong and weak nuclear forces in nature | (iii) describe effects of the strong nuclear forces in nature | | |
| (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: | (H) describe evidence for and effects of the strong and weak nuclear forces in nature | (iv) describe effects of the weak nuclear forces in nature | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (A) investigate and calculate quantities using the work-energy theorem in various situations | (i) investigate quantities using the work-energy theorem in various situations | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (A) investigate and calculate quantities using the work-energy theorem in various situations | (ii) calculate quantities using the work-energy theorem in various situations | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (B) investigate examples of kinetic and potential energy and their transformations | (i) investigate examples of kinetic energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (B) investigate examples of kinetic and potential energy and their transformations | (ii) investigate examples of potential energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (B) investigate examples of kinetic and potential energy and their transformations | (iii) investigate examples of [kinetic and potential energy] transformations | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (C) calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system | (i) calculate the mechanical energy of a physical system | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (C) calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system | (ii) calculate the power generated within a physical system | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (C) calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system | (iii) calculate the impulse applied to a physical system | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (C) calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system | (iv) calculate the momentum of a physical system | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (D) demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension | (i) demonstrate the law of conservation of energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (D) demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension | (ii) demonstrate the law of conservation of momentum in one dimension | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (D) demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension | (iii) apply the law of conservation of energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (D) demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension | (iv) apply the law of conservation of momentum in one dimension | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (E) describe how the macroscopic properties of a thermodynamic system such as temperature, specific heat, and pressure are related to the molecular level of matter, including kinetic or potential energy of atoms | (i) describe how the macroscopic properties of a thermodynamic system are related to the molecular level of matter, including kinetic or potential energy of atoms | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (F) contrast and give examples of different processes of thermal energy transfer, including conduction, convection, and radiation | (i) contrast different processes of thermal energy transfer, including conduction, convection, and radiation | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (F) contrast and give examples of different processes of thermal energy transfer, including conduction, convection, and radiation | (ii) give examples of different processes of thermal energy transfer, including conduction | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (F) contrast and give examples of different processes of thermal energy transfer, including conduction, convection, and radiation | (iii) give examples of different processes of thermal energy transfer, including convection | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (F) contrast and give examples of different processes of thermal energy transfer, including conduction, convection, and radiation | (iv) give examples of different processes of thermal energy transfer, including radiation | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (G) analyze and explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy and the law of entropy | (i) analyze everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (G) analyze and explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy and the law of entropy | (ii) analyze everyday examples that illustrate the laws of thermodynamics, including the law of entropy | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (G) analyze and explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy and the law of entropy | (iii) explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy | | |
| (6) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: | (G) analyze and explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy and the law of entropy | (iv) explain everyday examples that illustrate the laws of thermodynamics, including the law of entropy | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (A) examine and describe oscillatory motion and wave propagation in various types of media | (i) examine oscillatory motion in various types of media | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (A) examine and describe oscillatory motion and wave propagation in various types of media | (ii) describe oscillatory motion in various types of media | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (A) examine and describe oscillatory motion and wave propagation in various types of media | (iii) examine wave propagation in various types of media | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (A) examine and describe oscillatory motion and wave propagation in various types of media | (iv) describe wave propagation in various types of media | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (i) investigate characteristics of waves, including velocity | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (ii) investigate characteristics of waves, including frequency | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (iii) investigate characteristics of waves, including amplitude | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (iv) investigate characteristics of waves, including wavelength | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (v) analyze characteristics of waves, including velocity | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (vi) analyze characteristics of waves, including frequency | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (vii) analyze characteristics of waves, including amplitude | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (viii) analyze characteristics of waves, including wavelength | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (B) investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength | (ix) calculate using the relationship between wavespeed, frequency, and wavelength | | |

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| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (C) compare characteristics and behaviors of transverse waves, including electromagnetic waves and the electromagnetic spectrum, and characteristics and behaviors of longitudinal waves, including sound waves | (i) compare characteristics of transverse waves, including electromagnetic waves, and characteristics of longitudinal waves, including sound waves | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (C) compare characteristics and behaviors of transverse waves, including electromagnetic waves and the electromagnetic spectrum, and characteristics and behaviors of longitudinal waves, including sound waves | (ii) compare characteristics of transverse waves, including the electromagnetic spectrum, and characteristics of longitudinal waves, including sound waves | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (C) compare characteristics and behaviors of transverse waves, including electromagnetic waves and the electromagnetic spectrum, and characteristics and behaviors of longitudinal waves, including sound waves | (iii) compare behaviors of transverse waves, including electromagnetic waves, and behaviors of longitudinal waves, including sound waves | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (C) compare characteristics and behaviors of transverse waves, including electromagnetic waves and the electromagnetic spectrum, and characteristics and behaviors of longitudinal waves, including sound waves | (iv) compare behaviors of transverse waves, including the electromagnetic spectrum, and behaviors of longitudinal waves, including sound waves | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (i) investigate behaviors of waves, including reflection | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (ii) investigate behaviors of waves, including refraction | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (iii) investigate behaviors of waves, including diffraction | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (iv) investigate behaviors of waves, including interference | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (v) investigate behaviors of waves, including resonance | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect | (vi) investigate behaviors of waves, including the Doppler effect | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (E) describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens | (i) describe image formation as a consequence of reflection from a plane mirror | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (E) describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens | (ii) predict image formation as a consequence of reflection from a plane mirror | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (E) describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens | (iii) describe image formation as a consequence of refraction through a thin convex lens | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (E) describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens | (iv) predict image formation as a consequence of refraction through a thin convex lens | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (F) describe the role of wave characteristics and behaviors in medical and industrial applications | (i) describe the role of wave characteristics in medical applications | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (F) describe the role of wave characteristics and behaviors in medical and industrial applications | (ii) describe the role of wave behaviors in medical applications | | |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (F) describe the role of wave characteristics and behaviors in medical and industrial applications | (iii) describe the role of wave characteristics in industrial applications | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: | (F) describe the role of wave characteristics and behaviors in medical and industrial applications | (iv) describe the role of wave behaviors in industrial applications | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (A) describe the photoelectric effect and the dual nature of light | (i) describe the photoelectric effect of light | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (A) describe the photoelectric effect and the dual nature of light | (ii) describe the dual nature of light | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (B) compare and explain the emission spectra produced by various atoms | (i) compare the emission spectra produced by various atoms | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (B) compare and explain the emission spectra produced by various atoms | (ii) explain the emission spectra produced by various atoms | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (C) describe the significance of mass-energy equivalence and apply it in explanations of phenomena such as nuclear stability, fission, and fusion | (i) describe the significance of mass-energy equivalence | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (C) describe the significance of mass-energy equivalence and apply it in explanations of phenomena such as nuclear stability, fission, and fusion | (ii) apply [the mass-energy equivalence] in explanations of phenomena | | |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (D) give examples of applications of atomic and nuclear phenomena such as radiation therapy, diagnostic imaging, and nuclear power and examples of applications of quantum phenomena such as digital cameras | (i) give examples of applications of atomic and nuclear phenomena | | |

| **Subject** | **Chapter 112. Science** | | | |
|---|---|---|---|---|
| **Course Title** | **§112.39. Physics, Beginning with School Year 2010-2011 (One Credit).** | | | |
| TEKS (Knowledge and Skills) | Student Expectation | Breakout | Element | Subelement |
| (8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: | (D) give examples of applications of atomic and nuclear phenomena such as radiation therapy, diagnostic imaging, and nuclear power and examples of applications of quantum phenomena such as digital cameras | (ii) give examples of applications of quantum phenomena | | |