

Priority Academic Student Skills

Oklahoma State Department of Education
Science-High School
PHYSICS

Textbook Correlated: **CORD's *Physics in Context***

The *Priority Academic Student Skills (PASS)* should be taught by investigating content, concepts, and principles of major themes in Physics.

SCIENCE PROCESSES AND INQUIRY	
Process Standard	Correlation to CORD's <i>Physics in Context</i>
Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-site: learningincontext.com
1. Identify qualitative and quantitative changes given conditions (e.g., temperature, mass, volume, time, position, length) before, during, and after an event.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
2. Use appropriate tools (e.g., metric ruler, graduated cylinder, thermometer, balances, spring scales, stopwatches) when measuring objects and/or events.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
3. Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring objects and/or events.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
Process Standard 2: Classify - Classifying establishes order. Objects and events are classified based on similarities, differences, and interrelationships. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-

	site: learningincontext.com
1. Using observable properties, place an object or event into a classification system.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
2. Identify the properties by which a classification system is based.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
3. Graphically classify physical relationships (e.g., linear, parabolic, inverse)	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-site: learningincontext.com
1. Evaluate the design of a physics investigation.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
2. Identify the independent variables, dependent variables, and controls in an experiment.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
3. Use mathematics to show relationships within a given set of observations.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
4. Identify a hypothesis for a given problem in physics	Embedded in appropriate

investigations.	sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
5. Recognize potential hazards and practice safety procedures in all physics activities.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-site: learningincontext.com
1. Select appropriate predictions based on previously observed patterns of evidence.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*2. Report data in an appropriate manner.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
3. Interpret data tables, line, bar, trend, and/or circle graphs.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
4. Accept or reject hypotheses when given results of a physics investigation.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com

5. Evaluate experimental data to draw the most logical conclusion.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*6. Prepare a written report describing the sequence, results, and interpretation of a physics investigation or event.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*7. Communicate or defend scientific thinking that resulted in conclusions'	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
8. Identify and/or create an appropriate graph or chart from collected data, tables, or written description.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
Process Standard 5: Model - Modeling is the active process of forming a mental or physical representation from data, patterns, or relationships to facilitate understanding and enhance prediction. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-site: learningincontext.com
1. Interpret a model which explains a given set of observations.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
2. Select predictions based on models.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*3. Compare a given model to the physical world.	Embedded in appropriate sections of Student Text,

	Lab manual, student journal, assessment CD & web-site: learningincontext.com
Process Standard 6: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena. The student will accomplish these objectives to meet this process standard.	Introduced by exploring the concepts with the students in the student text, lab manual, and journal. Supported by Teachers text & lab Guide, assessment CD and web-site: learningincontext.com
*1. Formulate a testable hypothesis and design an appropriate experiment relating to the physical world.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*2. Design and conduct physics investigations in which variables are identified and controlled.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*3. Use a variety of technologies, such as hand tools, measuring instruments, and computers to collect, analyze, and display data.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com
*4. Inquiries should lead to the formulation of explanations or models (physical, conceptual, and mathematical). In answering questions, students should engage in discussions (based on scientific knowledge, the use of logic, and evidence from the investigation) and arguments that encourage the revision of their explanations, leading to further inquiry.	Embedded in appropriate sections of Student Text, Lab manual, student journal, assessment CD & web-site: learningincontext.com

PHYSICS HIGH SCHOOL	
Content Standards	Correlation to <i>CORD's Physics in Context</i>
Standard 1: Motions and Forces - The motion of an object can be described by its position, direction of motion, and speed. A change in motion occurs when a net force is applied. The student will engage in investigations that integrate the process and inquiry standards and lead to the	Student Text pp 2-227; Teacher's Guide pp T 2-T227; Lab Manual & Journal 1-1 – 4-33 Appropriate sections of

discovery of the following objectives:	Assessment CD and Web-site: Learningincontext.com .
1. Objects change their motion only when a net force is applied. Newton's laws of motion are used to calculate precisely the effects of forces on the motion of objects.	Student Text pp 4-26, 27-46, 84-94, 95-105, 122-137, 138-148, 170-183, 184-199; Teacher's Guide pp T4-26, T27-46, T84-94, T95-105, T122-137, T138-148, T170-183, T184-199; Lab Manual & Journal pp 1-1 -1-16, 2-1-2-26, 3-1 – 3-18, 4-1–4-14 Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
2. Gravitation is a universal force that each mass exerts on any other mass. The strength of the gravitational attractive force between two masses is proportional to the masses and inversely proportional to the square of the distance between them.	Student Text pp 47-63, 106-119, 149-167, 200-215; Teacher's Guide pp T47-63, T106-119, T 149-167, T200-215; Lab Manual & Journal pp 1-17 – 1-30, 2-27 - 2-33, 3-19 – 3-28, 4-15 – 4-33, Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
3. The electric force is a universal force that exists between any two charged objects. The strength of the force is proportional to the charges and, as with gravitation, inversely proportional to the square of the distance between them.	Student Text pp 47-63, 106-119, 149-167, 200-215; Teacher's Guide pp T47-63, T106-119, T 149-167, T200-215; Lab Manual & Journal pp 1-17 – 1-30, 2-27 - 2-33, 3-19 – 3-28, 4-15 – 4-33, Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
4. Electricity and magnetism are two aspects of a single electromagnetic force.	Student Text pp 296-323, Teacher's Guide pp T296-323 Lab Manual; & Journal pp 6-1 – 6-29;

	Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
Standard 2: Conservation of Energy - The total energy of the universe is constant. The student will engage in investigations that integrate the process and inquiry standards and lead to the discovery of the following objectives:	Student Text pp 228-295; Teachers Guide pp T228-295; Lab Manual & Journal pp 5-1 – 5-35 Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
1. Energy can be transferred but never destroyed. As these transfers occur, the matter involved becomes steadily less ordered.	Student Text pp 230-242, 243-261; Teachers Guide pp T230-242, T243-261; Lab Manual & Journal pp 5-3 -5-20; Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
2. All energy can be considered to be kinetic energy, potential energy, or energy contained by a field.	Student Text pp 262-276; Teacher's Guide pp T 262 – 276; Lab Manual & Journal pp 5-19- 5-34; Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
3. Heat consists of random motion and the vibrations of atoms, molecules, and ions. The higher the temperature, the greater the atomic or molecular motion.	Student Text pp 277-295; Teachers Guide pp T277-295; Lab Manual & Journal pp 5-35-5-40 Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
Standard 3: Interactions of Energy and Matter - Energy (potential, kinetic and field) interacts with matter and is transferred during these interactions. The student will engage in investigations that integrate the process and inquiry standards and lead to the discovery of the following objectives:	Student Text pp 352-283; Teacher's Guide pp T 352-283; Lab Manual & Journal pp 8-1 – 8-28; Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
1. Waves have energy and can transfer energy when they interact with matter. Sound waves and	Student Text pp 354-368; Teacher's Guide pp T 354

electromagnetic waves are fundamentally different.	-368; Lab Manual & Journal 8-1 -8-16; Appropriate sections of Assessment CD and Web-site: Learningincontext.com .
2. Electromagnetic waves result when a charged object is accelerated or decelerated.	Student Text pp 339- 351; Teacher's Guide T339-351; Lab Manual & Journal pp 8-17 – 8-29; Appropriate sections of Assessment CD and Web-site: Learningincontext.com .

Physics in Context, Student Edition © 2005, Developed by CORD Communications, Waco, Texas

Physics in Context, Teachers Edition Vol. 1-3, © 2005, Developed by CORD Communications, Waco, Texas

Physics in Context, Lab Manuals & Data Systems Manual © 2005 Developed by Energy Concepts for CORD Communications Waco, Texas

Physics in Context, Student Journal © 2005 Developed by Energy Concepts for CORD Communications Waco, Texas

Physics in Context, Test Databank © 2005 Developed by Exam View for CORD Communications Waco, Texas

Physics in Context, Web-site: WWW. Learningincontext.com 2005