

Active Physics Correlation to the Idaho Achievement Standards Grades 9-12

<p>"X" = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept.</p> <p>"XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3

648. UNIFYING CONCEPTS OF SCIENCE.

01. Understand systems, order, and organization.

a. Know the scientific meaning and application of the concepts of system, order, and organization.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
--	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

02. Understand concepts and processes of evidence, models, and explanation.

a. Know that observations and data are evidence on which to base scientific explanations.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Use models to explain how things work.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Develop scientific explanations based on scientific knowledge, logic, and analysis.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

03. Understand constancy, change, and measurement.

a. Identify constancy in some concepts in science that do not change with time such as the speed of light.	X	X	X		X	X							X					X
b. Recognize that change occurs in and among systems and change can be measured.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Measure in both the metric and U.S. customary system.																		

04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
a. Know that the present arises from materials and forms of the past.																		
b. Understand evolution as a series of changes, some gradual and some sporadic, that account for present form and function of objects, organisms, and natural or mechanical systems.																		
c. Know that equilibrium is a physical state in which forces and changes occur in opposite and offsetting directions.																		
05. Understand concepts of form and function.																		
a. Know that form refers to function and function refers to form.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
649. CONCEPTS OF SCIENTIFIC INQUIRY.																		
01. Understand scientific inquiry and develop critical thinking skills																		
a. Identify questions and concepts that guide scientific investigations.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Design and conduct scientific investigations	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Use technology and mathematics to improve investigations and communication.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
d. Formulate and revise scientific explanations and models using logic and evidence.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
e. Recognize and analyze alternative explanations and models.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
f. Communicate and defend a scientific argument.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
g. Know the differences among observations, hypotheses, and theories.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
650. CONCEPTS OF PHYSICAL SCIENCE.																		
01. Understand the structure of atoms.																		
a. Know the function and location of protons, neutrons, and electrons.																		
b. Understand the processes of fission and fusion.																		
c. Know the characteristics of isotopes.																		
d. Know the basic electrical properties of matter.					X	X												
02. Understand the structure and function of matter and molecules and their interactions.																		
a. Know how atoms interact with one another by transferring or sharing electrons.																		
b. Know how bonds between atoms are created when electrons are shared or transferred to form molecules or ionic substances.																		

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation			
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	
c. Know how the physical properties of compounds reflect the nature of the interactions among its molecules.																			
d. Know how solids, liquids, and gases differ in the energy that bonds them together.																			
03. Understand chemical reactions.																			
a. Know that chemical reactions may release or consume energy.																			
b. Know that chemical reactions can occur in time periods that vary from very fast to very slow and that catalysts can affect the rate of a chemical reaction.																			
c. Identify chemical reactions that are occurring all around us.																			
04. Understand concepts of motion and forces.																			
a. Know that gravitational force and electrical force are universal forces.		X	X		XX	XX							XX		XX	XX		X	
b. Know that objects change their motion only when a net force is applied.												XX	X	XX	XX	X	XX	XX	X
c. Understand that moving electrical charges produce magnetic forces, and moving magnets produce electrical forces.					X	XX													
05. Understand that the total energy in the universe is constant.																			

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
a. Understand that energy can be transferred but it can neither be destroyed nor created.				X	X	X						X	X		X			
b. Know that energy can be classified as either potential energy, kinetic energy, or energy contained by a field.		X		X	XX	XX						X	X	X	X			
c. Know that heat is evidenced by random motion and the vibrations of atoms, molecules, and ions.				XX	X	X												
d. Know that energy is transferred by various types of waves and by electrons flowing through matter.	XX	X	X	X	XX	XX	X	X	X			X						X
653. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.																		
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.																		
a. Know that all matter tends toward more disorganized states.																		
b. Know that living systems require a continuous input of energy to maintain their chemical and physical organization.																		
c. Know that the energy for life is primarily derived from the sun through photosynthesis.																		
d. Understand cellular respiration and the synthesis of macromolecules.																		

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
e. Know that chemical bonds of food molecules contain energy, which is released when the bonds are broken.																		
f. Know that cells usually store energy as Adenosine Triphosphate (ATP).																		
g. Know that the distribution and abundance of organisms and populations in ecosystems are limited by the availability of matter and energy.																		
h. Trace how matter cycles and energy flows through different levels of organization of living systems - cells, organs, organisms, communities - and between living systems and the physical environment.																		
02. Understand the individual behavior of organisms and their interactions in populations and communities as influenced by physiological and environmental factors.																		
a. Know that multi-cellular animals have nervous systems that generate behavior.																		
b. Know that the nerve cells communicate with each other by secreting specific excitatory and inhibitory molecules.																		

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
c. Know that organisms have behavioral responses to internal changes and to external stimuli., The and that broad patterns of behavior have evolved to ensure reproductive success.																		
d. Know that behaviors often have an adaptive logic when viewed in terms of natural selection.																		
655. TECHNOLOGY.																		
01. Understand the relationship between science and technology and develop the abilities of technological design and application.																		
a. Know the ways that science advances technology and technology advances science.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Recognize that science and technology are pursued for different purposes and that scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Know that critical thinking, creativity, imagination, and a good knowledge base are all required in the work of science and engineering.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
d. Know the elements of technological design, which include the following:	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
* Identify a problem or design an opportunity;	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
* Propose designs and choose between alternative solutions;	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
* Implement a proposed solution;	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
* Evaluate the solution and its consequences;	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
* Communicate the problem, process, and solution.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
e. Use available technology to assist in solving problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
656. PERSONAL AND SOCIAL PERSPECTIVES.																		
01. Understand common environmental quality issues, both natural and human induced.																		
a. Identify issues, including but not limited to: - Water quality; - Air quality; - Hazardous waste; - Forest health.		X		X	X													
02. Understand the causes and effects of population change.																		
a. Understand the impact of technological development and the growth of human population on the living and nonliving environment.																		

<p>“X” = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. “XX” = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.</p>	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
b. Understand the impact of population change on natural resources and community infrastructure.																		
03. Understand the importance of natural resources and the need to manage and conserve them.																		
a. Understand the differences between renewable and nonrenewable resources.																		
b. Understand the differences between preservation and conservation.																		
c. Understand the role and effect of management of natural resources.																		
04. Understand different uses of technology in science and how they affect our standard of living.																		
a. Identify examples of technologies used in scientific fields, including but not limited to: - Weather forecasting; - Food production; - Environmental cleanup; - Advances in medicine; - Communications; - The space program.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
657. HISTORY OF SCIENCE.																		
01. Understand the significance of major scientific milestones.																		

"X" = Coverage Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. "XX" = In-depth Coverage Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.	Communication			Home			Medicine			Predictions			Sports			Transportation		
	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3	Chapter 1	Chapter 2	Chapter 3
a. Understand the social and economic impact of historical scientific events.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Understand the contributions of notable scientists.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
658. INTERDISCIPLINARY CONCEPTS.																		
01. Understand that interpersonal relationships are important in scientific endeavors.																		
a. Know the importance of working in interdisciplinary teams to solve scientific problems.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
02. Understand technical communication.																		
a. Read for information.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Write and articulate technical information.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX