

Texas Essential Knowledge and Skills for Science - High School Physical Science



	Active Chemistry			Predictions			Sports			Home			Transportation			Medicine			Communication			
"XX" Indepth coverage of concept in student edition "X" Coverage in student edition and/or Teacher Edition supports the development of the concept	Periodic Table	Special Effects	Cool Chemistry	Chapters 1	Chapter 2	Chapter 3	Chapters 1	Chapter 2	Chapter 3	Chapters 1	Chapter 2	Chapter 3	Chapters 1	Chapter 2	Chapter 3	Chapters 1	Chapter 2	Chapter 3	Chapters 1	Chapter 2	Chapter 3	
Integrated Physics and Chemistry																						
Introduction																						
(1) In Integrated Physics and Chemistry, students conduct field and laboratory investigations, use scientific methods during investigations, and make informed decisions using critical-thinking and scientific problem-solving. This course integrates the disciplines of physics and chemistry in the following topics: motion, waves, energy transformations, properties of matter, changes in matter, and solution chemistry.	E	E	E		E	E	E	E	E	E	E	E	E	E	E				E	E	E	
(2) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.	E	E	E		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
(3) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.	SE 74-79, 133-142 TE 270-271, 432-433	SE 4-10, 12-19, 44-48, 51-54, 61-64, TE 16-18, 46-48, 112, 140-142, 162-164, 178-180, 194-196	SE 150-155, 157-161, 163-168, 170-178, 180-186, 187-193, 194-203, 204-207 TE 492-494, 518, 538-540, 560-561, 586-587, 628-629, 606, 656-657				XX SE 125-137 TE 250-269				XX SE 19-40 TE 44-93	E		XX SE 93-94 TE 192-197		XX SE 34-64 TE 66-118	E		XX SE 24-29 TE 48-57	XX SE 85-94 TE 172-188	XX SE 116-120 TE 248-254	



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(A) Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information	SE 80-87, 91-98, 99-106, 109-115, 118-125, 126-129, 133-142 TE 316-317, 338-339, 364-365, 392, 412-414, 432-433	SE 4-10, 12-19, 22-29, 61-64 TE 16-18, 46-48, 78-79, 162-164, 178-180, 194-196	SE 194-203, TE 586-587, 606, 628-629, 656-657																		XX SE 4-23, 30-53 TE 12-45, 60-106
(B) Draw inferences based in data related to promotional materials for products and services		SE 28-31, 61-64 TE 96	SE 163-168, 194-203, 204-207										XX SE 55-56 TE 105-106	XX SE 100-103 TE 206-211							
(C) Evaluate the impact of research on scientific thought, society, and the environment	SE 133-142, TE 449-450	SE 28-3, 44-48, 51-54, 61-64 TE 78-79, 96, 142-144, 162-164, 194-196	SE 194-203, 204-207 TE 656-657	XX SE 51 TE 95	XX SE 97 TE 188	XX SE 161 TE 303	XX SE 49 TE 109	XX SE 109 TE 223	XX SE 162 TE 324	XX SE 41 TE 95	XX SE 83 TE 183	XX SE 116 TE 254	XX SE 57 TE 107	XX SE 104 TE 212	XX SE 162 TE 324	XX SE 65 TE 119	XX SE 127 TE 251	XX SE 171 TE 349	XX SE 59 TE 115	XX SE 105 TE 213	XX SE 161 TE 325

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(D) Describe connections between physics and chemistry and future careers	SE 133-142	SE 12-19, 28-31,	SE 180-186	XX SE 51 TE 95	XX SE 97 TE 188	XX SE 161 TE 303	XX SE 49 TE 109	XX SE 109 TE 223	XX SE 162 TE 324	XX SE 41 TE 95	XX SE 83 TE 183	XX SE 116 TE 254	XX SE 57 TE 107	XX SE 104 TE 212	XX SE 162 TE 324	XX SE 65 TE 119	XX SE 127 TE 251	XX SE 171 TE 349	XX SE 59 TE 115	XX SE 105 TE 213	XX SE 161 TE 325
(E) Research and describe the history of physics, chemistry, and contributions of scientists	SE 91-98, 99-106, 118-125, 126-129, 133-142 TE 316-317, 338-339, 364-365, 392, 412-414, 432-433	SE 61-64 TE 16-18, 12-19, 22-25, 46-48, 78-79, 162-164, 194-196	SE 194-203, 204-207 TE 628-629			XX SE 138-160 TE 270-302															
(4) Science concepts. The student knows concepts of force and motion evident in everyday life. The student is expected to:																					
(A) Calculate speed, momentum, acceleration, work, and power in systems such as in the human body, moving toys, and machines					XX SE 61 TE 126-137		XX SE 4-8, 22-25, 38-48 TE 12-20, 54-63, 86-99	XX SE 73-80, 97-102 TE 161-168 204-212	XX SE 129-139 156-161 TE 272-291 316-327				XX SE 10-21, 26-39 TE 28-49, 58-79		XX SE 124-133 TE 256-272						

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(B) Investigate and describe applications of Newton's laws such as in vehicle restraints, sports activities, geological processes, and satellite orbits					F			F						XX SE 67 99 TE 140- 205								
(C) Analyze the effects caused by changing force or distance in simple machines as demonstrated in household devices, the human body, and vehicles																						
(D) Investigate and demonstrate mechanical advantage and efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps.																						
(5) Science concepts. The student knows the effects of waves on everyday life. The student is expected to:																						
(A) Demonstrate wave types and their characteristics through a variety of activities such as modeling with ropes and coils, activating tuning forks, and interpreting data on seismic waves																XX SE 22- 27 TE 46-53			XX SE 4- 23 TE 12-45	XX SE 64- 68 TE 134- 141		
(B) Demonstrate wave interactions including interferences, polarization, reflection, refraction, and resonance within various materials						XX SE 132- 137 TE 262- 269													XX SE 30- 53 TE 60- 106		XX SE 133- 144 TE 278- 297	
(C) Identify uses of electromagnetic waves in various technological applications such as fiber optics, optical scanners, and microwaves		TE 178- 180																				XX SE 126- 132 TE 266- 277

