

Textbook Alignment to the Utah Core – Physics

This alignment has been completed using an “Independent Alignment Vendor” from the USOE approved list (www.schools.utah.gov/curr/imc/indvendor.html.) Yes N/A No N/A

Name of Company and Individual Conducting Alignment: Shannon Roof (for McCormick Associates, Inc.)

A “Credential Sheet” has been completed on the above company/evaluator and is (Please check one of the following):

- On record with the USOE.
- The “Credential Sheet” is attached to this alignment.

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): **Physics Core Curriculum**

Title: Conceptual Physics (c) 2009, (Hewitt)

ISBN#: 0133647498 (SE); 0133647501 (TE); 0133647447 (TeacherExpress CD); 0133647366 (ExamView CD); 0133647552 (Proeware LM & CD); 0133647684 (StudentExpress CD); 0133647412 (Virtual Physics Lab CD); 0977046028 (Conceptual Physics Alive DVDs); 0133647528 (LM, SE)

Publisher: Pearson publishing as Prentice Hall

Overall percentage of coverage in the *Student Edition (SE) and Teacher Edition (TE)* of the Utah State Core Curriculum: 100 %

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: 100 %

STANDARD I: Students will understand how to measure, calculate, and describe the motion of an object in terms of position, time, velocity, and acceleration.

Percentage of coverage in the <i>student and teacher edition</i> for Standard I: <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard I: <u>100</u> %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 1.1: Describe the motion of an object in terms of position, time, and velocity.				
a.	Calculate the average velocity of a moving object using data obtained from measurements of position of the object at two or more times.	SE/TE: 57, 58	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion	
b.	Distinguish between distance and displacement.	SE/TE: 56	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion	

c.	Distinguish between speed and velocity.	SE/TE: 49, 50, 57, 79	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Lab Manual: 19-20, 21-24; Virtual Physics Lab 3: Measuring Speed	
d.	Determine and compare the average and instantaneous velocity of an object from data showing its position at given times.	SE/TE: 56, 58, 96, 97	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion;	
e.	Collect, graph, and interpret data for position vs. time to describe the motion of an object and compare this motion to the motion of another object.	SE/TE: 57, 58	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Probeware Lab Manual: 6-9, 70-74, 128-131; Lab Manual: 19-20, 21-24, 37-42; Virtual Physics Lab 4: Graphing Motion	
Objective 1.2: Analyze the motion of an object in terms of velocity, time, and acceleration.				

<p>a.</p>	<p>Determine the average acceleration of an object from data showing velocity at given times.</p>	<p>SE/TE: 51, 52, 53, 54, 55, 56, 59</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Probeware Lab Manual: 2-5, 66-69, 124-127; Lab Manual: 25-27, 29-35, 43-45</p>	
<p>b.</p>	<p>Describe the velocity of an object when its acceleration is zero.</p>	<p>SE/TE: 50</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Probeware Lab Manual: 2-5, 66-69, 124-127; Lab Manual: 25-27, 29-35, 43-45</p>	

<p>c.</p>	<p>Collect, graph, and interpret data for velocity vs. time to describe the motion of an object.</p>	<p>SE/TE:57</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Probeware Lab Manual: 2-5, 6-9, 66-69, 70-74, 124-127, 128-131; Lab Manual: 25-27, 29-35, 37-42, 43-45; Virtual Physics Lab 4: Graphing Motion</p>	
<p>d.</p>	<p>Describe the acceleration of an object moving in a circular path at constant speed (i.e., constant speed, but changing direction).</p>	<p>SE/TE: 171-174, 263, 265-268, 272-275</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Satellite Motion; Lab Manual: 127-129, 131-134, 153-156, 163-164, 165-169, 171-172; Virtual Physics Lab 13: Centripetal Motion, Lab 14 Rotational Inertia, Lab 17 Satellite Motion</p>	

e.	Analyze the velocity and acceleration of an object over time.	SE/TE: 50-55, 59	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD Linear Motion; Probeware Lab Manual: 2-5, 66-69, 124-127; Lab Manual: 25-27, 29-35, 43-45	
Objective 1.3: Relate the motion of objects to a frame of reference.				
a.	Compare the motion of an object relative to two frames of reference.	SE/TE: 47, 284-286	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Linear Motion, Special Relativity I, Special Relativity II	
b.	Predict the motion of an object relative to a different frame of reference (e.g., an object dropped from a moving vehicle observed from the vehicle and by a person standing on the sidewalk).	SE/TE: 47, 284-285	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Linear Motion, Special Relativity I, Special Relativity II	

c.	Describe how selecting a specific frame of reference can simplify the description of the motion of an object.	SE/TE: 47, 284-285, 308-309	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Linear Motion, Special Relativity I, Special Relativity II	
Objective 1.4: Use Newton's first law to explain the motion of an object.				
a.	Describe the motion of a moving object on which balanced forces are acting.	SE/TE: 33, 34, 213, 214, 215, 218	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 2: Newton's First Law, Lab 5 Inclined to Roll; Conceptual Physics Alive DVD: Newton's First Law; Lab Manual: 15-16, 17-18	
b.	Describe the motion of a stationary object on which balanced forces are acting.	SE/TE: 33	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 2: Newton's First Law, Lab 5 Inclined to Roll; Conceptual Physics Alive DVD: Newton's First Law; Lab Manual: 15-16, 17-18	

c.	Describe the balanced forces acting on a moving object commonly encountered (e.g., forces acting on an automobile moving at constant velocity, forces that maintain a body in an upright position while walking).	SE/TE:18, 19, 112-113, 191, 192, 198, 200-201	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 2: Newton's First Law, Lab 5 Inclined to Roll; Conceptual Physics Alive DVD: Newton's First Law; Lab Manual: 15-16, 17-18, 145-147, 149-151	
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STANDARD II: Students will understand the relation between force, mass, and acceleration.

Percentage of coverage in the <i>student and teacher edition</i> for Standard II: <u>100</u> %	Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard II: <u>100</u> %
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OBJECTIVES & INDICATORS	Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
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Objective 2.1: Analyze forces acting on an object.			
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a.	Observe and describe forces encountered in everyday life (e.g., braking of an automobile-friction, falling rain drops-gravity, directional compass-magnetic, bathroom scale-elastic or spring).	SE/TE: 13, 14, 16, 17, 30-31, 59, 92-93, 112-113, 125-129, 175-176, 178-179, 189, 190, 194, 196-197, 224, 238, 333, 348-349	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 1: Forces, Lab 9 Acceleration and Friction; Lab Manual: 47-49, 135-136, 153-156, 177-179	
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b.	Use vector diagrams to represent the forces acting on an object.	SE/TE: 14, 16, 17, 19-22, 69, 70-72, 77, 135-136, 176-177, 837-839	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 1: Forces; Conceptual Physics Alive DVD: Vectors and Projectiles; Lab Manual: 5-6, 7-10, 11-14	
c.	Measure the forces on an object using appropriate tools.	SE/TE: 13, 15, 38	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 1: Forces	
d.	Calculate the net force acting on an object.	SE/TE: 13-19, 27, 88	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 1: Forces	
Objective 2.2: Using Newton's second law, relate the force, mass, and acceleration of an object.				

<p>a.</p>	<p>Determine the relationship between the net force on an object and the object's acceleration.</p>	<p>SE/TE: 87, 88, 89</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 8: Newton's Second Law; Conceptual Physics Alive DVD: Newton's Second Law; Probeware Lab Manual: 2-5, 15-18, 19-23, 66-69, 80-82, 83-86, 124-127, 136-139, 140-143; Lab Manual: 25-27, 29-35, 43-45, 47-49, 51-54, 67-69, 71-73, 75-77, 121-126</p>	
<p>b.</p>	<p>Relate the effect of an object's mass to its acceleration when an unbalanced force is applied.</p>	<p>SE/TE:87, 88, 89, 93, 94, 95, 110-111</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 8: Newton's Second Law; Conceptual Physics Alive DVD: Newton's Second Law; Probeware Lab Manual: 2-5, 15-18, 19-23, 66-69, 80-82, 83-86, 124-127, 136-139, 140-143; Lab Manual: 25-27, 29-35, 43-45, 47-49, 51-54, 67-69, 71-73, 75-77, 121-126</p>	

<p>c.</p>	<p>Determine the relationship between force, mass, and acceleration from experimental data and compare the results to Newton's second law.</p>	<p>SE/TE: 88, 89, 95, 101, 110-111</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 8: Newton's Second Law; Conceptual Physics Alive DVD: Newton's Second Law; Probeware Lab Manual: 2-5, 15-18, 19-23, 66-69, 80-82, 83-86, 124-127, 136-139, 140-143; Lab Manual: 25-27, 29-35, 43-45, 47-49, 51-54, 67-69, 71-73, 75-77, 121-126</p>	
<p>d.</p>	<p>Predict the combined effect of multiple forces (e.g., friction, gravity, and normal forces) on an object's motion.</p>	<p>SE/TE: 30-31, 53-54, 90, 91, 92</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 8: Newton's Second Law; Conceptual Physics Alive DVD: Newton's Second Law; Lab Manual: 47-49, 51-54, 67-69</p>	
<p>Objective 2.3: Explain that forces act in pairs as described by Newton's third law.</p>				

<p>a.</p>	<p>Identify pairs of forces (e.g., action-reaction, equal and opposite) acting between two objects (e.g., two electric charges, a book and the table it rests upon, a person and a rope being pulled).</p>	<p>SE/TE: 107, 108, 109, 110, 111, 112, 113, 114-116</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 10: Newton's Third Law; Conceptual Physics Alive DVD: Newton's Third Law; Lab Manual: 79-82, 83-86</p>	
<p>b.</p>	<p>Determine the magnitude and direction of the acting force when magnitude and direction of the reacting force is known.</p>	<p>SE/TE: 108, 109, 110, 111, 112, 113, 114-116</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 10: Newton's Third Law; Conceptual Physics Alive DVD: Newton's Third Law; Lab Manual: 79-82, 83-86</p>	
<p>c.</p>	<p>Provide the magnitude and direction of the acting force when magnitude and direction of the reacting force is known.</p>	<p>SE/TE: 108, 109, 110, 111, 112, 113, 114-116</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Virtual Physics Lab 10: Newton's Third Law; Conceptual Physics Alive DVD: Newton's Third Law; Lab Manual: 79-82, 83-86</p>	

d.	Relate the historical development of Newton's laws of motion to our current understanding of the nature of science (e.g., based upon previous knowledge, empirical evidence, replicable observations, development of scientific law).	SE/TE: 29-32, 35, 38, 234-236, 254	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM	
STANDARD III: Students will understand the factors determining strength of gravitational and electric forces.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard III: <u>100</u> %	Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard III: <u>100</u> %			
OBJECTIVES & INDICATORS	Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	Not covered in TE, SE or ancillaries ✓	
Objective 3.1: Relate the strength of the gravitational force to the distance between two objects and the mass of objects (i.e., Newton's law of universal gravitation).				

<p>a.</p>	<p>Investigate how mass affects the gravitational force (e.g., spring scale, balance, or other method of finding a relationship between mass and the gravitational force).</p>	<p>SE/TE: 93, 94, 95, 237-239, 250, 251</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Gravity I, Gravity II; Virtual Physics Lab 6: Acceleration of Gravity, Lab 15 Universal Gravitation, Lab 16 Gravitational Interactions</p>	
<p>b.</p>	<p>Distinguish between mass and weight.</p>	<p>SE/TE: 36, 37, 38, 245, 246</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Gravity I, Gravity II; Virtual Physics Lab 6: Acceleration of Gravity, Lab 15 Universal Gravitation, Lab 16 Gravitational Interactions; Lab Manual: 135-136, 137-139, 141-144</p>	

<p>c.</p>	<p>Describe how distance between objects affects the gravitational force (e.g., effect of gravitational forces of the moon and sun on objects on Earth).</p>	<p>SE/TE: 237-239, 240-241, 250</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Gravity I, Gravity II; Virtual Physics Lab 6: Acceleration of Gravity, Lab 15 Universal Gravitation, Lab 16 Gravitational Interactions; Lab Manual: 161-162</p>	
<p>d.</p>	<p>Explain how evidence and inference are used to describe fundamental forces in nature, such as the gravitational force.</p>	<p>SE/TE: 93, 94, 95, 233</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Gravity I, Gravity II; Virtual Physics Lab 6: Acceleration of Gravity, Lab 15 Universal Gravitation, Lab 16 Gravitational Interactions</p>	

e.	Research the importance of gravitational forces in the space program.	SE/TE: 225, 243	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Gravity I, Gravity II; Virtual Physics Lab 6: Acceleration of Gravity, Lab 15 Universal Gravitation, Lab 16 Gravitational Interactions	
Objective 3.2: Describe the factors that affect the electric force (i.e., Coulomb's law).				
a.	Relate the types of charge to their effect on electric force (i.e., like charges repel, unlike charges attract).	SE/TE: 645, 646	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Electric Current; Lab Manual: 313-314, 315-318, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338; Virtual Physics Lab 29: The Effect of an Electric Field on Moving Charges	

<p>b.</p>	<p>Describe how the amount of charge affects the electric force.</p>	<p>SE/TE: 647, 649</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Electric Current; Lab Manual: 313-314, 315-318, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338, 341-343; Virtual Physics Lab 29: The Effect of an Electric Field on Moving Charges</p>	
<p>c.</p>	<p>Investigate the relationship of distance between charged objects and the strength of the electric force.</p>	<p>SE/TE: 648-650</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Electric Current; Lab Manual: 313-314, 315-318, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338; Virtual Physics Lab 29: The Effect of an Electric Field on Moving Charges</p>	

<p>d.</p>	<p>Research and report on electric forces in everyday applications found in both nature and technology (e.g., lightning, living organisms, batteries, copy machine, electrostatic precipitators).</p>	<p>SE/TE: 651-652, 653-654, 655-657, 681, 682, 683, 684, 686-692, 693-694, 703-712, 730-731</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Electric Current; Lab Manual: 313-314, 315-318, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338, 345-350; Virtual Physics Lab 29: The Effect of an Electric Field on Moving Charges; Probeware Lab Manual: 60-63, 119-123, 181-185</p>	
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STANDARD IV: Students will understand transfer and conservation of energy.

<p>Percentage of coverage in the <i>student and teacher edition</i> for Standard IV: <u>100</u> %</p>	<p>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard IV: <u>100</u> %</p>
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OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 4.1: Determine kinetic and potential energy in a system.				
a.	Identify various types of potential energy (i.e., gravitational, elastic, chemical, electrostatic, nuclear).	SE/TE: 148, 149, 160, 162, 269-270, 669-671, 812-814, 824	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Probeware Lab Manual: 28-32, 91-94, 148-151; Lab Manual: 103-104, 105-106, 107-109, 111-113, 117-120, 157-159	
b.	Calculate the kinetic energy of an object given the velocity and mass of the object.	SE/TE: 150, 406, 408	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy, Fission and Fusion; Probeware Lab Manual: 28-32, 91-94, 148-151; Lab Manual: 103-104, 105-106, 107-109, 111-113, 117-120, 157-159, 365-366	

c.	Describe the types of energy contributing to the total energy of a given system.	SE/TE: 151-152, 153-154, 155-157, 269, 270	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Probeware Lab Manual: 28-32, 91-94, 148-151; Lab Manual: 103-104, 105-106, 107-109, 111-113, 117-120, 157-159	
Objective 4.2: Describe the conservation of energy in terms of systems.				
a.	Describe a closed system in terms of its total energy.	SE/TE: 153-154, 155-159	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Probeware Lab Manual: 28-32, 91-94, 148-151; Lab Manual: 105-106, 107-109	

<p>b.</p>	<p>Relate the transformations between kinetic and potential energy in a system (e.g., moving magnet induces electricity in a coil of wire, roller coaster, internal combustion engine).</p>	<p>SE/TE: 153-154, 674, 682, 693-694, 728-729, 730-731, 741-742, 743-745, 746, 747-749, 750-751</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Probeware Lab Manual: 28-32, 60-63, 91-94, 119-122, 148-151, 181-185; Lab Manual: 103-104, 105-106, 107-109, 111-113, 117-120, 156-159, 247-248</p>	
<p>c.</p>	<p>Gather data and calculate the gravitational potential energy and the kinetic energy of an object (e.g., pendulum, water flowing downhill, ball dropped from a height) and relate this to the conservation of energy of a system.</p>	<p>SE/TE: 148, 149, 214, 491</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Probeware Lab Manual: 152-157, 171-174,; Lab Manual: 55-58, 59-65, 117-120, 131-134, 259-260; Virtual Physics Lab 7: Gravity and Projectile Motion</p>	

<p>d.</p>	<p>Evaluate social, economic, and environmental issues related to the production and transmission of electrical energy.</p>	<p>SE/TE: 163, 693-694</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Lab Manual: 319-322, 323-324, 325-328, 329-332, 333-336, 337-338; Virtual Physics Lab 30: Capacitors, Lab 31 Electric Current, Lab 32 Series and Parallel Circuits</p>	
<p>Objective 4.3: Describe common energy transformations and the effect on availability of energy.</p>				
<p>a.</p>	<p>Describe the loss of useful energy in energy transformations.</p>	<p>SE/TE: 159-160, 409, 475-478</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy, Heat Transfer, Heat Radiation; Virtual Physics Lab 12: Energy Conversions; Probeware Lab Manual: 40-43, 102-105, 162-164; Lab Manual: 115-116, 201-203, 205-208, 221-224</p>	

<p>b.</p>	<p>Investigate the transfer of heat energy by conduction, convection, and radiation.</p>	<p>SE/TE: 409, 410, 431-432, 433-435, 436-438, 470-471</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy, Heat Transfer, Heat Radiation; Probeware Lab Manual: 40-43, 102-105, 162-164; Lab Manual: 201-203, 205-208, 209-211, 225-228, 229-232, 233-236, 237-239, 247-248</p>	
<p>c.</p>	<p>Describe the transformation of mechanical energy into electrical energy and the transmission of electrical energy.</p>	<p>SE/TE: 674, 744-745, 746, 747-749, 750</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy; Virtual Physics Lab 12: Energy Conversions; Probeware Lab Manual: 60-63, 119-123, 181-185; Lab Manual: 249-251, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338; Virtual Physics Lab 30 capacitors, Lab 31 Electric Current, Lab 32 Series and Parallel Circuits</p>	

<p>d.</p>	<p>Research and report on the transformation of energy in electrical generation plants (e.g., chemical to heat to electricity, nuclear to heat to mechanical to electrical, gravitational to kinetic to mechanical to electrical), and include energy losses during each transformation.</p>	<p>SE/TE: 672-673, 693-695, 730-731, 743-746, 812-814, 822-824</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Energy, Fission and Fusion; Virtual Physics Lab 12: Energy Conversions; Probeware Lab Manual: 60-63, 119-123, 181-185; Lab Manual: 249-251, 319-322, 323-324, 325-328, 329-332, 333-336, 337-338,345-350; Virtual Physics Lab 30 capacitors, Lab 31 Electric Current, Lab 32 Series and Parallel Circuits</p>	
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STANDARD V: Students will understand the properties and application of waves.

<p>Percentage of coverage in the <i>student and teacher edition</i> for Standard V: <u>100</u> %</p>	<p>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard V: <u>100</u> %</p>
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OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 5.1: Demonstrate an understanding of mechanical waves in terms of general wave properties.				
a.	Differentiate between period, frequency, wavelength, and amplitude of waves.	SE/TE: 492-493, 495	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound; Lab Manual: 261-264, 265-268	
b.	Investigate and compare reflection, refraction, and diffraction of waves.	SE/TE: 556, 579, 580-583, 584-590, 593-595, 602-612, 625-627, 630	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound Reflection and Refraction; Virtual Physics Lab 26: Reflection and Refraction of Light, Lab 28 Diffraction and Interference; Lab Manual: 283-284, 285-286, 287-288, 289-292, 299-300, 302-304, 305-306, 309-312	

c.	Provide examples of waves commonly observed in nature and/or used in technological applications.	SE/TE: 515-517, 603-609, 610-611	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound; Lab Manual: 261-264, 265-268	
d.	Identify the relationship between the speed, wavelength, and frequency of a wave.	SE/TE: 492, 495-496, 518	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound; Lab Manual: 261-264, 265-268	
e.	Explain the observed change in frequency of a mechanical wave coming from a moving object as it approaches and moves away (i.e., Doppler effect).	SE/TE: 501-503	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound	
f.	Explain the transfer of energy through a medium by mechanical waves.	SE/TE: 493-494	Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Vibrations and Sound; Lab Manual: 261-264, 265-268	
Objective 5.2: Describe the nature of electromagnetic radiation and visible light.				

<p>a.</p>	<p>Describe the relationship of energy to wavelength or frequency for electromagnetic radiation.</p>	<p>SE/TE: 492-493, 536, 572</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Light and Color, Light Waves; Lab Manual: 269-270; Virtual Physics Lab 24: Light Investigation</p>	
<p>b.</p>	<p>Distinguish between the different parts of the electro-magnetic spectrum (e.g., radio waves and x-rays or visible light and microwaves).</p>	<p>SE/TE: 436, 493, 753-755</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Light and Color, Light Waves; Lab Manual: 269-270</p>	
<p>c.</p>	<p>Explain that the different parts of the electromagnetic spectrum all travel through empty space and at the same speed.</p>	<p>SE/TE: 518, 753-754</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Light and Color, Light Waves; Lab Manual: 269-270</p>	

<p>d.</p>	<p>Explain the observed change in frequency of an electro-magnetic wave coming from a moving object as it approaches and moves away (i.e., Doppler effect, red/blue shift).</p>	<p>SE/TE: 501-503</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Light and Color, Light Waves</p>	
<p>e.</p>	<p>Provide examples of the use of electromagnetic radiation in everyday life (e.g., communications, lasers, microwaves, cellular phones, satellite, dishes, visible light).</p>	<p>SE/TE: 537-538, 539, 541, 542-543, 544-546, 555-556, 558, 559, 560-561, 562-563, 558, 559, 560-561, 562-563, 564-565, 566-567, 568-569, 570-571, 616,634-636,756</p>	<p>Student Express CD ROM; Teacher Express CD ROM; Examview CD ROM; Conceptual Physics Alive DVD: Light and Color, Light Waves, Vibrations and Sound I, Vibrations and Sound II; Virtual physics Lab 24: Light Investigation, Lab 25 Color in Light, Lab 27 Lenses; Probeware Lab Manual: 56-59, 116-118, 175-180; Lab Manual: 269-270, 271-272, 273-276, 277-278, 279-282, 283-284, 285-286, 287-288, 289-292, 293-296, 297-298, 299-300, 301-304, 305-306, 307-308</p>	