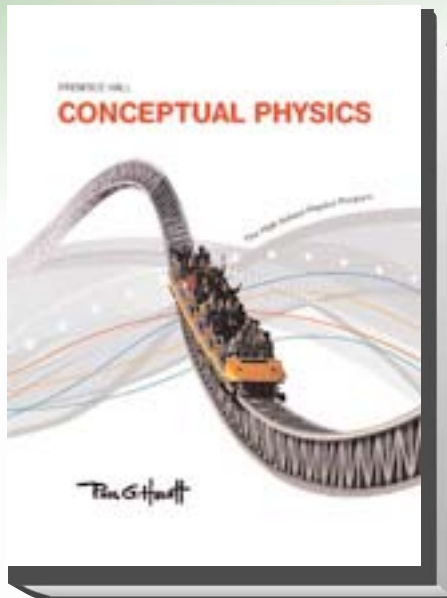


Grades 9-12

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C O R R E L A T E D T O

Tennessee Curriculum Standards – Conceptual Physics
(Grades 9-12)

PEARSON

TEACH & LEARN • ASSESS & INFORM • DEVELOP & LEAD

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
Course Description	
Conceptual Physics is a laboratory course that examines the interactions between matter and energy. Students explore physics concepts through an inquiry approach integrated with appropriate algebra-based mathematics.	
Conceptual Physics students investigate:	
<ul style="list-style-type: none"> • Inquiry • Technology and Engineering • Mathematics • Mechanics • Thermodynamics • Waves and Optics • Electricity and Magnetism • Nuclear Science 	
Embedded Inquiry	
Conceptual Strand - Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21st century.	
Guiding Question - What tools, skills, knowledge, and dispositions are needed to conduct scientific inquiry?	
Course Level Expectations	
CLE 3200.Inq.1 Recognize that science is a progressive endeavor that reevaluates and extends what is already accepted.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 1-7
CLE 3200.Inq.2 Design and conduct scientific investigations to explore new phenomena, verify previous results, test how well a theory predicts, and compare opposing theories.	<i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i> SE/TE: 12, 46, 124, 144, 170, 212, 262, 302, 382, 468, 490

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 3, 7, 17, 26, 33, 40, 42, 56, 67, 69, 72, 74, 89, 92, 95; Probeware Lab Manual 1-15</p>
<p>CLE 3200.Inq.3 Use appropriate tools and technology to collect precise and accurate data.</p>	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 46, 147, 282, 324, 344, 382, 406, 450, 514, 664, 702, 740</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 1, 15, 18, 19, 21, 25, 38, 41, 42, 51, 52, 55, 59, 60, 71; Probeware Lab Manual 1-15</p>
<p>CLE 3200.Inq.4 Apply qualitative and quantitative measures to analyze data and draw conclusions that are free of bias.</p>	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 12, 46, 68, 170, 232, 344, 382, 430, 554, 602, 740, 782, 808</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual; 4, 5, 6, 11, 13, 14, 20, 22, 45, 48, 54, 59, 65; Probeware Lab Manual 1-15</p>
<p>CLE 3200.Inq.5 Compare experimental evidence and conclusions with those drawn by others about the same testable question.</p>	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 106, 124, 170, 179, 324, 344, 419, 455, 539, 602, 702, 808</p>

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 19, 2, 23, 31, 46, 55, 58, 61, 62, 78, 85, 86, 91, 93, 96; Probeware Lab Manual 1-15</p>
CLE 3200.Inq.6 Communicate and defend scientific findings.	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 55, 144, 173, 190, 282, 344, 406, 430, 514, 554, 622, 664, 720, 766, 808</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 2, 7, 15, 18, 27, 29, 38, 45, 46, 47, 49, 52, 56, 72, 73, 84, 85, 86; Probeware Lab Manual 1-15</p>
Checks for Understanding (Formative/Summative Assessment)	
3200.Inq.1 Develop a testable question for a scientific investigation.	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 12, 46, 124, 144, 170, 212, 262, 302, 382, 468, 490</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 6, 8, 14, 19, 25, 27, 34, 47, 52, 53, 64, 75, 76, 81, 99; Probeware Lab Manual 1-15</p>
3200.Inq.2 Develop an experimental design for testing a hypothesis.	<p><i>The opportunity to address this standard is found on the following pages:</i></p> <p>SE/TE: 1-7</p>

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 5, 9, 10, 16, 21, 28, 39, 48, 57, 62, 85, 86, 91, 92, 98; Probeware Lab Manual 1-15</p>
3200.Inq.3 Select appropriate independent, dependent, or controlled variables for an experiment.	<p><i>The opportunity to address this standard is found on the following pages:</i></p> <p>SE/TE: 1-7</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 7, 8, 20, 22, 26, 34, 44, 56, 68, 74, 75, 81, 83, 86, 97 ; Probeware Lab Manual 1-15</p>
3200.Inq.4 Perform an experiment to test a prediction.	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 46, 75, 86, 106, 109, 124, 132, 147, 173, 190, 200, 253, 344, 364</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 2, 12, 15, 17, 29, 38, 46, 58, 59, 68, 72, 75, 89, 95, 96; Probeware Lab Manual 1-15</p>
3200.Inq.5 Gather, organize, and transform data from an experiment into a table, graph, or diagram.	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 4, 5, 6, 11, 13, 14, 20, 22, 45, 48, 54, 59, 65; Probeware Lab Manual 1-15</p>

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.Inq.6 Analyze data from a table, graph, or diagram.	<i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i> TR: Lab Manual 4, 5, 6, 11, 13, 14, 20, 22, 45, 48, 54, 59, 65; Probeware Lab Manual 1-15
3200.Inq.7 Analyze and interpret the results of an experiment.	<i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i> SE/TE: 32, 86, 132, 215, 282, 369, 409, 430, 436, 468, 514, 539
	<i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i> TR: Lab Manual 2, 12, 15, 17, 29, 38, 46, 58, 59, 68, 72, 75, 89, 95, 96; Probeware Lab Manual 1-15
3200.Inq.8 Apply knowledge and data-interpretation skills to support a conclusion.	<i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i> SE/TE: 46, 75, 86, 106, 109, 124, 132, 147, 173, 190, 200, 253, 344, 364
	<i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i> TR: Lab Manual 4, 8, 25, 33, 36, 37, 49, 51, 52, 68, 75, 79, 82, 83, 89; Probeware Lab Manual 1-15
3200.Inq.9 Determine whether data supports or contradicts a simple hypothesis or conclusion.	<i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i> SE/TE: 46, 75, 86, 106, 109, 124, 132, 147, 173, 190, 200, 253, 344, 364

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 2, 12, 15, 17, 29, 38, 46, 58, 59, 68, 72, 75, 89, 95, 96; Probeware Lab Manual 1-15</p>
<p>3200.Inq.10 Analyze experimental results and identify possible sources of experimental error.</p>	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 3, 4, 9, 16, 24, 28, 32, 34, 49, 58, 62, 68, 87, 92,93; Probeware Lab Manual 1-15</p>
<p>3200.Inq.11 State a conclusion in terms of the relationship between two or more variables.</p>	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 2, 12, 15, 17, 29, 38, 46, 58, 59, 68, 72, 75, 89, 95, 96; Probeware Lab Manual 1-15</p>
<p>3200.Inq.12 Compare the results of an experiment with what is already known about the topic under investigation.</p>	<p><i>The discover! activities in the text provide the opportunity to address this standard. Representative activities can be found on the following pages:</i></p> <p>SE/TE: 106, 109, 124, 132, 173, 200, 232, 282, 364, 409, 664, 720, 740, 782</p>
	<p><i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i></p> <p>TR: Lab Manual 12, 14, 23, 26, 29, 31, 40, 43, 46, 57, 69, 86, 91, 98, 99 ; Probeware Lab Manual 1-15</p>

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.Inq.13 Suggest alternative explanations for the same set of observations.	<i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i> TR: Lab Manual 4, 6, 9, 12, 15, 18, 22, 27, 34, 36, 39, 48, 49, 50, 80; Probeware Lab Manual 1-15
3200.Inq.14 Formulate and revise scientific explanations and models using logic and evidence.	<i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard. Representative lab activities include the following:</i> TR: Lab Manual 11, 15, 18, 28, 31, 40, 46, 50, 60, 68, 85, 86, 90, 91, 92; Probeware Lab Manual 1-15
Embedded Technology and Engineering	
Conceptual Strand - Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.	
Guiding Question - How do science concepts, engineering skills, and applications of technology improve the quality of life?	
Course Level Expectations	
CLE 3200.T/E.1 Explore the impact of technology on social, political, and economic systems.	SE/TE: 5, 91, 163, 204, 236, 248, 275, 292, 476, 481, 518, 526, 611, 648, 673, 709, 727, 729, 745, 751, 756, 793, 817
	TR: Reading and Study Workbook
	TECH: PresentationEXPRESS; StudentEXPRESS; Interactive Textbook
CLE 3200.T/E.2 Differentiate among elements of the engineering design cycle: design constraints, model building, testing, evaluating, modifying, and retesting.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 5
	TR: Reading and Study Workbook
	TECH: PresentationEXPRESS; StudentEXPRESS; Interactive Textbook

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
CLE 3200.T/E.3 Explain the relationship between the properties of a material and the use of the material in the application of a technology.	SE/TE: 91, 292, 330-331, 334-335, 337, 345-352, 363-374, 383-395, 476, 518, 582-584, 595, 611, 633-634, 651-652, 673, 709, 729, 745, 751, 793, 798-799, 817
	TR: Reading and Study Workbook; Lab Manual 48, 49, 51-53, 77-80; Problem-Solving Exercises in Physics 9-1, 10-2, 10-4, 14-3, 18-4; Concept-Development Practice Book 19-1, 19-2, 20-1, 29-1, 29-2, 29-5; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5, 20-1, 20-2, 29-1, 29-2, 29-3, 29-4
	TECH: Transparencies 29, 30, 32, 33, 35-39, 69; PresentationEXPRESS; StudentEXPRESS; Interactive Textbook 17-20; Exam-View 17-20; Virtual Physics Lab 18-21; Conceptual Physics Alive! DVDs "Liquids I", "Liquids II", "Gases"
CLE 3200.T/E.4 Describe the dynamic interplay among science, technology, and engineering within living, earth-space, and physical systems.	SE/TE: 37, 91, 96, 107, 154, 199, 223, 252, 292, 294, 316, 332, 352, 476, 518, 611, 673, 692, 709, 729, 745, 751, 793, 817
Checks for Understanding (Formative/Summative Assessment)	
3200.T/E.1 Select appropriate tools to conduct a scientific inquiry.	<i>SE/TE: The discover! activities in the text provide the opportunity to address this standard.</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.T/E.2 Apply the engineering design process to construct a prototype that meets developmentally appropriate specifications.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 5
	TR: Reading and Study Workbook
	TECH: PresentationEXPRESS; StudentEXPRESS; Interactive Textbook
3200.T/E.3 Explore how the unintended consequences of new technologies can impact human and non-human communities.	SE/TE: 5, 91, 163, 204, 236, 248, 275, 292, 476, 481, 518, 526, 611, 648, 673, 709, 727, 729, 745, 751, 756, 793, 817

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	TR: Reading and Study Workbook
	TECH: PresentationEXPRESS; StudentEXPRESS; Interactive Textbook
3200.T/E.4 Present research on current engineering technologies that contribute to improvements in our daily lives.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 91, 163, 248, 275, 292, 476, 518, 611, 673, 709, 729, 745, 751, 793, 817
3200.T/E.5 Design a series of multi-view drawings that can be used by other students to construct an adaptive design and test its effectiveness.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 5
	TR: Reading and Study Workbook
	TECH: PresentationEXPRESS; StudentEXPRESS; Interactive Textbook
Embedded Mathematics	
Conceptual Strand - Physics applies mathematics to investigate questions, solve problems, and communicate findings.	
Guiding Question - What mathematical skills and understandings are needed to successfully investigate conceptual physics?	
Course Level Expectations	
CLE 3200.Math.1 Understand the mathematical principles that underlie the science of physics.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages:</i> SE/TE: 1, 832-833, 840-842, 844-890
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
CLE 3200.Math.2 Utilize appropriate mathematical equations and processes to solve basic physics problems.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages:</i> SE/TE: 1, 832-833, 840-842, 844-890

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	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
Checks for Understanding (Formative/Summative Assessment)	
3200.Math.1 Use a variety of notations appropriately (e.g., exponential, functional, square root).	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 1, 832-833, 840-842, 844-890</i>
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.2 Select and apply an appropriate method for computing with real numbers, and evaluate the reasonableness of results.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 1, 832-833, 834-836, 840-842, 844-890</i>
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.3 Apply and interpret rates of change from graphical and numerical data.	SE/TE: <i>The opportunity to address this standard is found in the assessments at the end of each chapter.</i>
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.4 Analyze graphs to describe the behavior of functions.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 834-836</i>
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.Math.5 Interpret results of algebraic procedures.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.6 Model real-world phenomena using functions and graphs.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.7 Articulate and apply algebraic properties in symbolic manipulation.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.8 Apply and communicate measurement concepts and relationships in algebraic and geometric problem-solving situations.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.9 Make decisions about units, scales, and measurement tools that are appropriate for problem situations involving measurement.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 830-831</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>

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3200.Math.10 Collect, represent, and describe linear and nonlinear data sets developed from the real world.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.11 Make predictions from a linear data set using a line of best fit.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.12 Interpret a data set using appropriate measures of central tendency.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.13 Choose, construct, and analyze appropriate graphical representations for a data set.	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 834-836</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
3200.Math.14 Use real numbers to represent real-world applications (e.g., slope, rate of change, probability, and proportionality).	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages: SE/TE: 834-836, 844-890</i>
	<i>TR: The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>

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3200.Math.15 Apply right triangle relationships including the Pythagorean Theorem and the distance formula.	SE/TE: 56, 240-241, 893
3200.Math.16 Use concepts of length, area, and volume to estimate and solve real-world problems.	SE/TE: 353-356
	TR: Reading and Study Workbook; Lab Manual 50; Problem-Solving Exercises in Physics 9-2; Concept-Development Practice Book 18-1, 18-2; Next-Time Questions 18-1
	TECH: Transparencies 31; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 18; Exam-View 18; Virtual Physics Lab 17; Conceptual Physics Alive! DVDs "Scaling"
3200.Math.17 Demonstrate an understanding of rates and other derived and indirect measurements (e.g., velocity, miles per hour, revolutions per minute, and cost per unit).	<i>The opportunity to address this standard is found in the assessments at the end of each chapter and on the following pages:</i> SE/TE: 844-890
	TR: <i>The activities in the lab manual and Probeware Lab Manual provide the opportunity to address this standard</i>
Standard 1 – Mechanics	
Conceptual Strand 1 - The laws and properties of mechanics provide the foundations of Conceptual Physics.	
Guiding Question 1 - How do the laws and properties of mechanics govern the basic understanding of physics concepts?	
Course Level Expectations	
CLE 3200.1.1 Investigate fundamental physical quantities of mass and time.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 48-58
	TR: Reading and Study Workbook; Lab Manual 8, 9, 11-13; Probeware Lab Manual 1, 2; Problem-Solving Exercises in Physics 1-1, 1-2; Concept-Development Practice Book 4-1, 4-2; Next-Time Questions 4-1, 4-2

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	TECH: Transparencies 1-3; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 4; Exam-View 4; Virtual Physics Lab 3-6
CLE 3200.1.2 Analyze and apply Newton’s three laws of motion.	SE/TE: 33-39, 88-97, 107-116
	TR: Reading and Study Workbook; Lab Manual 18-22; Problem-Solving Exercises in Physics 3-1, 3-2, 3-3, 3-4; Concept-Development Practice Book 3-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 7-1, 7-2; Next-Time Questions 3-1, 3-2, 6-2, 6-5, 6-6, 6-7, 7-1, 7-2
	TECH: Transparencies 10; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 3, 6, 7; Exam-View 3, 6, 7; Virtual Physics Lab 2, 8, 9, 10; Conceptual Physics Alive! DVDs “Newton’s Second Law” , “Newton’s Third Law”
CLE 3200.1.3 Differentiate among work, energy, and power.	SE/TE: 144-150
	TR: Reading and Study Workbook; Lab Manual 26; Probeware Lab Manual 7; Problem-Solving Exercises in Physics 5-1
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 9; Exam-View 9; Virtual Physics Lab 12
CLE 3200.1.4 Investigate kinematics and dynamics.	SE/TE: 145-163
	TR: Reading and Study Workbook; Lab Manual 26-32; Probeware Lab Manual 7, 8; Problem-Solving Exercises in Physics 5-1, 5-2, 5-3; Concept-Development Practice Book 9-1, 9-2, 9-3
	TECH: Transparencies 13, 14; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 9; Exam-View 9; Virtual Physics Lab 12

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
CLE 3200.1.5 Investigate and apply Archimedes's Principle.	SE/TE: 367-370, 391
	TR: Reading and Study Workbook; Concept-Development Practice Book 19-1; Next-Time Questions 19-1, 19-2, 20-2
	TECH: Transparencies 32, 33; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20
CLE 3200.1.6 Explore Pascal's Principle.	SE/TE: 373-374
	TR: Reading and Study Workbook; Problem-Solving Exercises in Physics 10-2
	TECH: Transparencies 35; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20
CLE 3200.1.7 Analyze applications of Bernoulli's Principle.	SE/TE: 392-395
	TR: Reading and Study Workbook; Problem-Solving Exercises in Physics 10-4; Concept-Development Practice Book 20-2; Next-Time Questions 20-3
	TECH: Transparencies 38, 39; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 20; Exam-View 20; Virtual Physics Lab 21
Checks for Understanding (Formative/Summative Assessment)	
3200.1.1 Investigate, measure, and calculate position, displacement, velocity and acceleration.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 48-58
	TR: Reading and Study Workbook; Lab Manual 8, 9, 11-13; Probeware Lab Manual 1, 2; Problem-Solving Exercises in Physics 1-1, 1-2; Concept-Development Practice Book 4-1, 4-2; Next-Time Questions 4-1, 4-2

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	TECH: Transparencies 1-3; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 4; Exam-View 4; Virtual Physics Lab 3-6
3200.1.2 Analyze vector diagrams.	SE/TE: 19-22, 69-79, 837-839
	TR: Reading and Study Workbook; Lab Manual 3, 16; Probeware Lab Manual 3; Problem-Solving Exercises in Physics 2-1; Concept-Development Practice Book 2-2, 3-1, 5-2; Next-Time Questions 2-2, 5-1, 5-2, 5-3
	TECH: Transparencies 2, 4-6; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 2, 5; Exam-View 2, 5; Virtual Physics Lab 1, 7; Conceptual Physics Alive! DVDs "Vectors and Projectiles"
3200.1.3 Explore characteristics of rectilinear motion and create distance-time graphs and velocity-time graphs.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 48-58
	TR: Reading and Study Workbook; Lab Manual 8, 9, 11-13; Probeware Lab Manual 1, 2; Problem-Solving Exercises in Physics 1-1, 1-2; Concept-Development Practice Book 4-1, 4-2; Next-Time Questions 4-1, 4-2
	TECH: Transparencies 1-3; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 4; Exam-View 4; Virtual Physics Lab 3-6
3200.1.4 Investigate the characteristics of centripetal motion and centripetal acceleration.	SE/TE: 178-180, 223-224
	TR: Reading and Study Workbook; Problem-Solving Exercises in Physics 6-1; Concept-Development Practice Book
	TECH: Transparency 15; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 10; Exam-View 10

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.1.5 Evaluate the dynamics of systems in motion and collisions including friction, gravity, impulse and momentum, change in momentum and conservation of momentum.	SE/TE: 125-136
	TR: Reading and Study Workbook; Lab Manual 23, 24, 25; Probeware Lab Manual 6; Problem-Solving Exercises in Physics 5-1, 5-2; Concept-Development Practice Book 8-1, 8-2; Next-Time Questions 8-1
	TECH: Transparencies 11, 12; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 8; Exam-View 8; Virtual Physics Lab 11; Conceptual Physics Alive! DVDs "Momentum"
3200.1.6 Investigate projectile motion.	SE/TE: 73-79
	TR: Reading and Study Workbook; Lab Manual 16; Probeware Lab Manual 3; Concept-Development Practice Book 3-1, 5-2; Next-Time Questions 5-1, 5-3
	TECH: Transparencies 5, 6; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 5; Exam-View 5; Virtual Physics Lab 7
3200.1.7 Distinguish between mass and weight using SI units.	SE/TE: 36-37, 93-95
	TR: Next-Time Questions 6-3, 6-4
	TECH: Transparency 9
3200.1.8 Measure and calculate mechanical advantage of mechanical devices.	SE/TE: 155-160
	TR: Reading and Study Workbook; Lab Manual 27, 31, 32; Probeware Lab Manual 8; Concept-Development Practice Book 9-2, 9-3; Problem-Solving Exercises in Physics 5-3
	TECH: Transparencies 13, 14; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 9; Exam-View 9; Virtual Physics Lab 12

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.1.9 Relate time to the independent variable of most experiments.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 48-58
	TR: Reading and Study Workbook; Lab Manual 8, 9, 11-13; Probeware Lab Manual 1, 2; Problem-Solving Exercises in Physics 1-1, 1-2; Concept-Development Practice Book 4-1, 4-2; Next-Time Questions 4-1, 4-2
	TECH: Transparencies 1-3; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 4; Exam-View 4; Virtual Physics Lab 3-6
3200.1.10 Relate inertia, force, or action-reaction forces to Newton's three laws of motion and distinguish among the three laws in various scenarios.	SE/TE: 33-39, 88-97, 107-116
	TR: Reading and Study Workbook; Lab Manual 18-22; Problem-Solving Exercises in Physics 3-1, 3-2, 3-3, 3-4; Concept-Development Practice Book 3-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 7-1, 7-2; Next-Time Questions 3-1, 3-2, 6-2, 6-5, 6-6, 6-7, 7-1, 7-2
	TECH: Transparencies 10; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 3, 6, 7; Exam-View 3, 6, 7; Virtual Physics Lab 2, 8, 9, 10; Conceptual Physics Alive! DVDs "Newton's Second Law", "Newton's Third Law"
3200.1.11 Compare, contrast, and apply the characteristic properties of scalar and vector quantities.	SE/TE: 14, 69
	TR: Reading and Study Workbook
	TECH: Conceptual Physics Alive! DVDs "Vectors and Projectiles"
3200.1.12 Investigate the definitions of force, work, power, kinetic energy and potential energy.	SE/TE: 145-163

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	TR: Reading and Study Workbook; Lab Manual 26-32; Probeware Lab Manual 7, 8; Problem-Solving Exercises in Physics 5-1, 5-2, 5-3; Concept-Development Practice Book 9-1, 9-2, 9-3
	TECH: Transparencies 13, 14; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 9; Exam-View 9; Virtual Physics Lab 12
3200.1.13 Analyze the characteristics of energy, and conservation of energy including friction, and gravitational potential energy.	SE/TE: 148-154
	TR: Reading and Study Workbook; Lab Manual 29-30; Problem-Solving Exercises in Physics 5-2; Concept-Development Practice Book 9-1
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 9; Exam-View 9
3200.1.14 Investigate the buoyant force exerted on floating and submerged objects.	SE/TE: 366-374
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
	TECH: Transparencies 32, 33, 34; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20
3200.1.15 Investigate the apparent weight of an object submerged in a fluid.	SE/TE: 366-374
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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	TECH: Transparencies 32, 33, 34; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20
3200.1.16 Explain why objects float or sink in terms of force or density.	SE/TE: 366-374
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
	TECH: Transparencies 32, 33, 34; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20
3200.1.17 Examine the motion of fluids.	SE/TE: 363-374
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
	TECH: Transparencies 32, 33, 34, 35; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 19; Exam-View 19; Virtual Physics Lab 20; Conceptual Physics Alive! DVDs "Liquids I", "Liquids II"
3200.1.18 Recognize the effects of Bernoulli's principle on fluid motion (e.g., lift, ball trajectories, and wind around/over object).	SE/TE: 392-395
	TR: Reading and Study Workbook; Problem-Solving Exercises in Physics 10-4; Concept-Development Practice Book 20-2; Next-Time Questions 20-3
	TECH: Transparencies 38, 39; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 20; Exam-View 20; Virtual Physics Lab 21

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
Standard 2 – Thermodynamics	
Conceptual Strand 2 - The principles and laws of thermodynamics are essential for understanding the concept of energy.	
Guiding Question 2 - How do the laws of thermodynamics relate to understanding the conservation of energy?	
Course Level Expectations	
CLE 3200.2.1 Explore the relationships among temperature, heat, and internal energy.	SE/TE: 407-412
	TR: Reading and Study Workbook; Concept-Development Practice Book 21-1; Next-Time Questions 21-1, 21-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 21; Exam-View 21; Virtual Physics Lab 22; Conceptual Physics Alive! DVDs "Heat, Temperature and Expansion"
CLE 3200.2.2 Compare Fahrenheit, Celsius, and Kelvin temperature scales.	SE/TE: 407
CLE 3200.2.3 Investigate exchanges in internal energy.	SE/TE: 411, 413-414
	TR: Reading and Study Workbook
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 21
Checks for Understanding (Formative/Summative Assessment)	
3200.2.1 Investigate the relationship between temperature and kinetic energy.	SE/TE: 408, 451
	TR: Reading and Study Workbook; Next-Time Questions 21-1

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 21; Exam-View 21; Virtual Physics Lab 22; Conceptual Physics Alive! DVDs "Heat, Temperature and Expansion", "Heat: Change of State"
3200.2.2 Distinguish among internal energy, temperature, and heat.	SE/TE: 407-412
	TR: Reading and Study Workbook; Concept-Development Practice Book 21-1; Next-Time Questions 21-1, 21-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 21; Exam-View 21; Virtual Physics Lab 22; Conceptual Physics Alive! DVDs "Heat, Temperature and Expansion"
3200.2.3 Investigate heat changes using calorimetry.	SE/TE: 411-412, 470-471
	TR: Reading and Study Workbook; Concept-Development Practice Book 24-1; Next-Time Questions 24-1
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 24
3200.2.4 Investigate energy changes associated with heats of fusion and vaporization.	SE/TE: 458-461
	TR: Reading and Study Workbook; Lab Manual 57, 65; Probeware Lab Manual 12; Concept-Development Practice Book 23-1, 23-2; Next-Time Questions 23-2
	TECH: Transparency 45
3200.2.5 Explore thermal expansion and contraction.	SE/TE: 416-419
	TR: Reading and Study Workbook; Lab Manual 58; Problem-Solving Exercises in Physics 10-1, 10-2

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	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 21; Exam-View 21
3200.2.6 Apply the Second Law of Thermodynamics to the Carnot engine.	SE/TE: 475-478
	TR: Reading and Study Workbook
	TECH: Transparency 49; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 24; Exam-View 24
3200.2.7 Apply the Laws of Thermodynamics to atmospheric and climatic changes.	SE/TE: 470-475
	TR: Reading and Study Workbook; Concept_Development Practice Book 24-1; Next-Time Questions 24-1
	TECH: Transparency 48; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 24; Exam-View 24
3200.2.8 Recognize that absolute zero is the absence of molecular kinetic energy.	SE/TE: 469
	TR: Reading and Study Workbook
	TECH: Transparency 47; StudentEXPRESS; PresentationEXPRESS
3200.2.9 Relate the First Law of Thermodynamics as an application of the Law of Conservation of Energy to heat transfer through conduction, convection, and radiation.	SE/TE: 470-475
	TR: Reading and Study Workbook; Concept_Development Practice Book 24-1; Next-Time Questions 24-1
	TECH: Transparency 48; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 24; Exam-View 24

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Standard 3 – Waves and Optics	
Conceptual Strand 3 - Investigating wave behavior reveals information about sound and light.	
Guiding Question 3 - How does the wave model explain the phenomena of sound and light?	
Course Level Expectations	
CLE 3200.3.1 Explore conditions associated with simple harmonic motion.	SE/TE: 491
	TR: Reading and Study Workbook; Lab Manual 68, 69; Probeware Lab Manual 13; Problem-Solving Exercises in Physics 12-1, 12-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
CLE 3200.3.2 Investigate Hooke's law.	SE/TE: 348-349
	TR: Reading and Study Workbook; Lab Manual 49; Problem-Solving Exercises in Physics 9-1
	TECH: Transparency 30; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 18; Virtual Physics Lab 19
CLE 3200.3.3 Understand wave mechanics.	SE/TE: 491-499
	TR: Reading and Study Workbook; Lab Manual 68, 69; Probeware Lab Manual 13; Problem-Solving Exercises in Physics 13-1
	TECH: Transparencies 50, 51; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
CLE 3200.3.4 Examine the Doppler Effect.	SE/TE: 501-503
	TR: Reading and Study Workbook; Concept Development Practice Book 25-1; Problem-Solving Exercises in Physics 13-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
CLE 3200.3.5 Explore the characteristics and properties of sound.	SE/TE: 514-526
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
	TECH: Transparencies 54, 55; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 26; Exam-View 26; Conceptual Physics Alive! DVDs "Vibrations and Sound I", "Vibrations and Sound II"
CLE 3200.3.6 Describe the characteristics of the electromagnetic spectrum.	SE/TE: 536
	TR: Next-Time Questions 27-1, 27-2
	TECH: Transparency 57"
CLE 3200.3.7 Investigate the interaction of light waves.	SE/TE: 532-546
	TR: Reading and Study Workbook; Lab Manual 73, 74; Probeware Lab Manual 14; Problem-Solving Exercises in Physics 14-1; Concept-Development Practice Book 27-1, 27-2; Next-Time Questions 27-1, 27-2, 27-3
	TECH: Transparencies 56-59; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 27; Exam-View 27; Virtual Physics Lab 24; Conceptual Physics Alive! DVDs "Light Waves"
CLE 3200.3.8 Explore the optical principles of mirrors and lenses.	SE/TE: 580-581
	TR: Reading and Study Workbook; Lab Manual 81-86; Problem-Solving Exercises in Physics 15-1, 15-2; Concept-Development Practice Book 30-1, 30-2; Next-Time Questions 30-1, 30-2, 30-3

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	TECH: Transparencies 72, 73; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 29, 30; Exam-View 29, 30; Virtual Physics Lab 27
CLE 3200.3.9 Investigate the phenomenon of color.	SE/TE: 554-573
	TR: Reading and Study Workbook; Lab Manual 75, 76; Concept-Development Practice Book 28-1; Next-Time Questions 28-1
	TECH: Transparencies 60-67; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 28; Exam-View 28; Virtual Physics Lab 25; Conceptual Physics Alive! DVDs "Light and Color"
Checks for Understanding (Formative/Summative Assessment)	
3200.3.1 Investigate simple harmonic motion.	SE/TE: 491
	TR: Reading and Study Workbook; Lab Manual 68, 69; Probeware Lab Manual 13; Problem-Solving Exercises in Physics 12-1, 12-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
3200.3.2 Explore Hooke's Law.	SE/TE: 348-349
	TR: Reading and Study Workbook; Lab Manual 49; Problem-Solving Exercises in Physics 9-1
	TECH: Transparency 30; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 18; Virtual Physics Lab 19
3200.3.3 Investigate and analyze wavelength, frequency and amplitude of longitudinal and transverse waves.	SE/TE: 491-499
	TR: Reading and Study Workbook; Lab Manual 68, 69; Probeware Lab Manual 13; Problem-Solving Exercises in Physics 13-1

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	TECH: Transparencies 50, 51; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
3200.3.4 Compare mechanical and electromagnetic waves.	SE/TE: 491-499, 536
	TR: Reading and Study Workbook; Lab Manual 68, 69; Probeware Lab Manual 13; Problem-Solving Exercises in Physics 13-1; Next-Time Questions 27-1, 27-2
	TECH: Transparencies 50, 51, 57; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
3200.3.5 Investigate reflection, refraction, diffraction, and interference of sound waves.	SE/TE: 514-526
	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
	TECH: Transparencies 54, 55; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 26; Exam-View 26; Conceptual Physics Alive! DVDs "Vibrations and Sound I", "Vibrations and Sound II"
3200.3.6 Demonstrate the Doppler Effect.	SE/TE: 501-503
	TR: Reading and Study Workbook; Concept Development Practice Book 25-1; Problem-Solving Exercises in Physics 13-2
	TECH: StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 25; Exam-View 25
3200.3.7 Determine the speed of sound experimentally and describe how various materials and temperatures affect wave transmission.	SE/TE: 515-525

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	TR: Reading and Study Workbook; Lab Manual 70-72; Concept-Development Practice Book 26-1; Next-Time Questions 26-1
	TECH: Transparencies 54, 55; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 26; Exam-View 26; Conceptual Physics Alive! DVDs "Vibrations and Sound I", "Vibrations and Sound II"
3200.3.8 Measure spring constants.	<i>The opportunity to address this standard is found on the following pages:</i> SE/TE: 497
	TR: Reading and Study Workbook
	TECH: Transparency 51; StudentEXPRESS; PresentationEXPRESS
3200.3.9 Compare wave characteristics to natural auditory phenomena.	SE/TE: 515-525
	TR: Reading and Study Workbook; Lab Manual 70-72; Concept-Development Practice Book 26-1; Next-Time Questions 26-1
	TECH: Transparencies 54, 55; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 26; Exam-View 26; Conceptual Physics Alive! DVDs "Vibrations and Sound I", "Vibrations and Sound II"
3200.3.10 Explore properties of the electromagnetic spectrum.	SE/TE: 536
	TR: Next-Time Questions 27-1, 27-2
	TECH: Transparency 57"
3200.3.11 Examine properties of light waves.	SE/TE: 533-546
	TR: Reading and Study Workbook; Lab Manual 73, 74; Probeware Lab Manual 14; Problem-Solving Exercises in Physics 14-1; Concept-Development Practice Book 27-1, 27-2; Next-Time Questions 27-1, 27-2, 27-3

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	TECH: Transparencies 56-59; StudentEXPRESS; PresentationEXPRESS; Interactive Textbook 27; Exam-View 27; Virtual Physics Lab 24; Conceptual Physics Alive! DVDs "Light Waves"
3200.3.12 Investigate reflection, refraction, diffraction, and interference of light waves.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.13 Investigate the polarization of plane and curved mirrors.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.14 Use ray tracings to solve optics of mirrors and lenses problems.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.15 Solve problems related to Snell's laws.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.16 Investigate optical phenomena (e.g., mirage, optical illusions, and dichromatic lens effect).	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.17 Distinguish between coherent and incoherent light.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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3200.3.18 Examine the properties of lasers.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.3.19 Explore the additive and subtractive properties associated with color formation.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
Standard 4 – Electricity and Magnetism	
Conceptual Strand 4 - Various tools and equipment can be used to investigate the interplay between magnetic fields and the generation of electricity.	
Guiding Question 4 - What force and energy concepts are needed to explain magnetism and electricity?	
Course Level Expectations	
CLE 3200.4.1 Distinguish among electric forces, electric charges, and electric fields.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.4.2 Explore static and current electricity.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.4.3 Investigate Ohm's law.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.4.4 Compare and contrast series and parallel circuits.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
CLE 3200.4.5 Analyze components of electrical schematic diagrams.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.4.6 Investigate magnetic poles, magnetic fields, and electromagnetic induction.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
Checks for Understanding (Formative/Summative Assessment)	
3200.4.1 Measure voltage, current, and resistance.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.2 Draw electric field lines, given a scenario of charged particles.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.3 Draw and explain series and parallel circuits.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.4 Identify components of series and parallel circuits and solve problems related to voltage, current, and resistance.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.5 Build series and parallel circuits and describe how they function.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.4.6 Demonstrate and explain electromagnetic induction.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.7 Sketch the magnetic field lines around a bar magnet.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.4.8 Create a simple electromagnet.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
Standard 5 – Nuclear Science	
Conceptual Strand 5 - A deep understanding of particle physics is accomplished by investigating the principles of nuclear science.	
Guiding Question 5 - What particle physics concepts explain nuclear science?	
Course Level Expectations	
CLE 3200.5.1 Investigate the properties and structure of the atom.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.5.2 Explore the dynamics of the nucleus: radioactivity, nuclear decay, radiocarbon/uranium dating, and half-life.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
CLE 3200.5.3 Compare and contrast nuclear fission and nuclear fusion.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
CLE 3200.5.4 Investigate quantum theory.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
Checks for Understanding (Formative/Summative Assessment)	
3200.5.1 Identify the parts of an atom.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.2 Describe the properties and location of subatomic particles.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.3 Explain how particles behave like waves.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.4 Describe three forms of radioactivity in terms of changes in atomic number or mass number.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.5 Investigate the concept of half-life.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.6 Write balanced equations for the three forms of radioactive decay.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5

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TENNESSEE SCIENCE CURRICULUM STANDARDS – CONCEPTUAL PHYSICS	PAGE(S) WHERE TAUGHT (If submission is not a text, cite appropriate resource(s))
3200.5.7 Explain carbon-14 or uranium dating methods.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.8 Distinguish between nuclear fission and nuclear fusion in terms of transmutation.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5
3200.5.9 Investigate the history of nuclear science.	TR: Reading and Study Workbook; Lab Manual 51-53; Problem-Solving Exercises in Physics 10-2; Concept-Development Practice Book 19-1, 19-2; Next-Time Questions 19-1, 19-2, 19-3, 19-4, 19-5