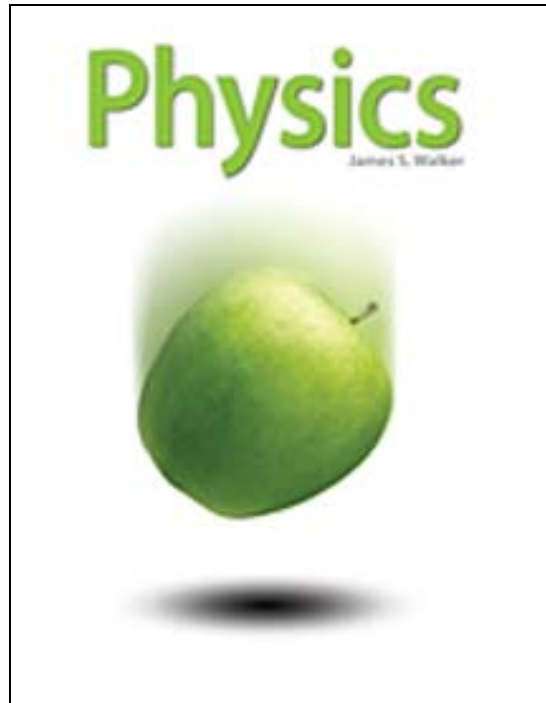


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To

**Ohio's  
New Learning Standards  
for Science, 2011  
Physics, High School  
Science Inquiry and Application  
Course Content**

Savvas is proud to partner with Pearson to offer the best in AP, honors, and electives products.

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**INTRODUCTION**

This document demonstrates how *Pearson Physics, ©2014* meets the Virginia Standards of Learning Curriculum Framework for Physics. Science Inquiry and Application references are to the Student and Teacher Edition feature and page levels. Course content references are to the chapter and lesson levels.

*Pearson Physics* offers a new path to mastery— a “concepts first” approach that supports a superior, step-by-step problem solving process.

*Pearson Physics* is the only high school program that blends conceptual development and quantitative problem solving. The conversational and engaging writing style, numerous and varied examples, annotated art program, and dual emphasis on concepts and math— together with MasteringPhysics®— deliver a superior program.

*Pearson Physics* Key Features:

Four distinct example types—and their related Practice Problems—build problem-solving skills for both math-based and conceptual-based problems.

- **Conceptual Examples** reinforce basic concepts and make connections to numerical calculations
  - **Quick Examples** present short, simple calculations to aid in understanding a new equation
  - **Active Examples** bridge the gap between examples and homework problems
  - **Guided Examples** use detailed strategies and solutions to develop problem-solving skills and deepen student understanding of concepts
- 
- ✓ The chapter-opening Big Idea statement outlines the chapter’s overarching theme.
  - ✓ The chapter-opening Inquiry Lab provides a simple exploratory activity that stimulates interest and provides a glimpse of the chapter concepts.
  - ✓ The end-of-chapter Physics Lab provides an in-depth, full-page traditional lab activity that applies the concepts learned.

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<b>Ohio's New Learning Standards for Science - Physics</b>	<b>Pearson Physics ©2014</b>
<b>COURSE DESCRIPTION</b>	
<p>Physics is a high school level course, which satisfies the <b>Ohio Core</b> science graduation requirements of <b>Ohio Revised Code Lesson 3313.603</b>. This Lesson of Ohio law requires a three-unit course with inquiry-based laboratory experience that engages students in asking valid scientific questions and gathering and analyzing information.</p> <p>Physics elaborates on the study of the key concepts of motion, forces and energy as they relate to increasingly complex systems and applications that will provide a foundation for further study in science and scientific literacy.</p> <p>Students engage in investigations to understand and explain motion, forces and energy in a variety of inquiry and design scenarios that incorporate scientific reasoning, analysis, communication skills and real-world applications.</p>	
<b>SCIENCE INQUIRY AND APPLICATION</b>	
<p>During the years of grades 9 through 12, all students must use the following scientific processes with appropriate <b>laboratory safety techniques</b> to construct their knowledge and understanding in all science content areas:</p>	
<ul style="list-style-type: none"> <li>• Identify questions and concepts that guide scientific investigations;</li> </ul>	<p>This process is met throughout the program. Please find representative pages:  <b>SE/TE:</b> Physics Lab, Conclusions: p.64; Inquiry Lab, Think: p.113; Physics Lab, Conclusions: p.142; Physics Lab, Conclusions: p.218; Inquiry Lab, Think: p.307; Inquiry Lab, Think: p.343; Physics Lab, Conclusions: p.376; Physics Lab, Conclusions: p.521; Inquiry Lab, Think: p.675; Physics Lab, Conclusions: p.874</p>
<ul style="list-style-type: none"> <li>• Design and conduct <b>scientific investigations</b>;</li> </ul>	<p>This process is met throughout the program. Please find representative pages:  <b>SE/TE:</b> Physics Lab, Procedure: p.142; Physics Lab: Procedure, p.178; Inquiry Lab, Explore: p.189; Physics Lab, Procedure: p.218; Physics Lab, Procedure: p.334; Physics Lab, Procedure: p.376; Physics Lab, Procedure: p.521; Inquiry Lab, Explore: p.597; Physics Lab, Procedure: p.696; Inquiry Lab, Explore: p.745</p>

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<ul style="list-style-type: none"> <li>• Use technology and mathematics to improve investigations and communications;</li> </ul>	<p>This process is met throughout the program. Please find representative pages: <b>SE/TE:</b> Physics Lab, Analysis: p.142; Physics Lab, Analysis: p.178; Physics Lab, Analysis: p.218; Physics Lab, Analysis: p.258; Physics Lab, Analysis: p.334; Physics Lab, Analysis: p.408; Physics Lab, Analysis: p.484; Physics Lab, Analysis: p.627; Physics Lab, Analysis: p.696; Physics Lab, Analysis: p.874</p>
<ul style="list-style-type: none"> <li>• Formulate and revise explanations and models using logic and evidence (critical thinking);</li> </ul>	<p>This process is met throughout the program. Please find representative pages: <b>SE/TE:</b> Inquiry Lab, Think (#3): p.73; Physics Lab, Conclusions (#4): p.103; Inquiry Lab, Think (#3): p.113; Physics Lab, Conclusions (#4): p.334; Inquiry Lab, Think (#3): p.343; Physics Lab, Conclusions (#2): p.444; Inquiry Lab, Think (#3): p.529; Inquiry Lab, Think (#3): p.637; Inquiry Lab, Think (#3): p.883</p>
<ul style="list-style-type: none"> <li>• Recognize and analyze explanations and models; and</li> </ul>	<p>This process is met throughout the program. Please find representative pages: <b>SE/TE:</b> Inquiry Lab, Think (#1), p.113; Inquiry Lab, Think (#4): p.229; Physics Lab, Conclusions (#1): p.588; Physics Lab, Conclusions (#2): p.627; Inquiry Lab, Think (#3): p.783; Physics Lab, Conclusions (#1): p.874; Physics Lab, Conclusions (#2): p.904</p>
<ul style="list-style-type: none"> <li>• Communicate and support a scientific argument.</li> </ul>	<p>This process is met throughout the program. Please find representative pages: <b>SE/TE:</b> Physics Lab, Conclusions (#1): p.178; Physics Lab, Conclusions (#2): p.218; Physics Lab, Conclusions (#1): p.299; Physics Lab, Conclusions (#3): p.334; Physics Lab, Conclusions (#3): p.874; Physics Lab, Conclusions (#2): p.904</p>

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<b>COURSE CONTENT</b>	
The following information may be taught in any order; there is no ODE-recommended sequence.	
<b>MOTION</b>	
• Graph interpretations	<b>SE/TE:</b> Chapters 2, 3
• Position vs. time	<b>SE/TE:</b> Chapter 2: Lessons 2.3, 2.4; Chapter 2: Physics Lab
• Velocity vs. time	<b>SE/TE:</b> Chapter 3: Lessons 3.1, 3.2, 3.4
• Acceleration vs. time	<b>SE/TE:</b> Chapter 3: Lesson 3.3; Chapter 3: Physics Lab
• Problem solving	<b>SE/TE:</b> Chapters 2, 3
• Using graphs (average velocity, instantaneous velocity, acceleration, displacement, change in velocity)	<b>SE/TE:</b> Chapter 2: Lessons 2.3, 2.4; Chapter 3: Lessons 3.1, 3.2, 3.3
• Uniform acceleration including free fall (initial velocity, final velocity, time, displacement, acceleration, average velocity)	<b>SE/TE:</b> Chapter 2: Lessons 2.1, 2.2, 2.3; Chapter 3: Lessons 3.1, 3.2, 3.3, 3.4
• Projectiles	<b>SE/TE:</b> Chapter 4
• Independence of horizontal and vertical motion	<b>SE/TE:</b> Chapter 4: Lesson 4.4
• Problem-solving involving horizontally launched projectiles	<b>SE/TE:</b> Chapter 4: Lesson 4.4; Chapter 4: Physics Lab
<b>FORCES, MOMENTUM AND MOTION</b>	
• Newton's laws applied to complex problems	<b>SE/TE:</b> Chapter 5: Lessons 5.1, 5.2
• Gravitational force and fields	<b>SE/TE:</b> Chapter 9: Lessons 9.1, 9.2
• Elastic forces	<b>SE/TE:</b> Chapter 7: Lesson 7.4
• Friction force (static and kinetic)	<b>SE/TE:</b> Chapter 5: Lesson 5.3
• Air resistance and drag	<b>SE/TE:</b> Chapter 4: Lesson 4.4
• Forces in two dimensions	<b>SE/TE:</b> Chapters 4, 5, 9

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<b>Ohio's New Learning Standards for Science - Physics</b>	<b>Pearson Physics ©2014</b>
• Adding vector forces	<b>SE/TE:</b> Chapter 4: Lesson 4.2
• Motion down inclines	<b>SE/TE:</b> Chapter 5: Lesson 5.2; R18
• Centripetal forces and circular motion	<b>SE/TE:</b> Chapter 9: Lesson 9.3
• Momentum, impulse and conservation of momentum	<b>SE/TE:</b> Chapter 7: Lessons 7.1, 7.2, 7.3
<b>ENERGY</b>	
• Gravitational potential energy	<b>SE/TE:</b> Chapter 6: Lesson 6.2
• Energy in springs	<b>SE/TE:</b> Chapter 6: Lesson 6.2
• Nuclear energy	<b>SE/TE:</b> Chapter 26: Lessons 26.2, 26.3
• Work and power	<b>SE/TE:</b> Chapter 6: Lessons 6.1, 6.4
• Conservation of energy	<b>SE/TE:</b> Chapter 6: Lesson 6.3
<b>WAVES</b>	
• Wave properties	<b>SE/TE:</b> Chapters 13, 17, 18
• Conservation of energy	<b>SE/TE:</b> Chapter 13: Lesson 13.4; Chapter 20: Lesson 20.2
• Reflection	<b>SE/TE:</b> Chapter 13: Lesson 13.3; Chapter 17: Lesson 17.2
• Refraction	<b>SE/TE:</b> Chapter 17: Lessons 17.1, 17.2
• Interference	<b>SE/TE:</b> Chapter 13: Lesson 13.4; Chapter 18: Lessons 18.1, 18.2
• Diffraction	<b>SE/TE:</b> Chapter 18: Lessons 18.3, 18.4; Chapter 18 Physics Lab
• Light phenomena	<b>SE/TE:</b> Chapters 15, 16, 17, 18, 24
• Ray diagrams (propagation of light)	<b>SE/TE:</b> Chapter 16: Lessons 16.1, 16.3; Chapter 17: Lesson 17.3
• Law of reflection (equal angles)	<b>SE/TE:</b> Chapter 16: Lesson 16.1
• Snell's law	<b>SE/TE:</b> Chapter 17: Lesson 17.1

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• Diffraction patterns	<b>SE/TE:</b> Chapter 18: Lesson 18.3; Chapter 24: Lesson 24.2
• Wave – particle duality of light	<b>SE/TE:</b> Chapter 15: Lesson 15.1; Chapter 24: Lesson 24.2
• Visible spectrum and color	<b>SE/TE:</b> Chapter 15: Lesson 15.2; Chapter 17: Lesson 17.2
<b>ELECTRICITY AND MAGNETISM</b>	
• Charging objects (friction, contact and induction)	<b>SE/TE:</b> Chapter 19: Lesson 19.1; Chapter 20: Lesson 20.1
• Coulomb's law	<b>SE/TE:</b> Chapter 19: Lessons 19.2, 19.3; Chapter 20: Lesson 20.1; Chapter 26: Lesson 26.1
• Electric fields and electric potential energy	<b>SE/TE:</b> Chapter 20: Lessons 20.1, 20.2
• DC circuits	<b>SE/TE:</b> Chapters 19, 20, 21
• Ohm's law	<b>SE/TE:</b> Chapter 21: Lesson 21.1, 21.4
• Series circuits	<b>SE/TE:</b> Chapter 21: Lesson 21.2
• Parallel circuits	<b>SE/TE:</b> Chapter 21: Lesson 21.2
• Mixed circuits	<b>SE/TE:</b> Chapter 21: Lesson 21.2
• Applying conservation of charge and energy (junction and loop rules)	<b>SE/TE:</b> Chapter 19: Lesson 19.1; Chapter 20: Lesson 20.2
• Magnetic fields and energy	<b>SE/TE:</b> Chapter 22: Lessons 22.1, 22.2, 22.3; Chapter 22: Physics Lab; Chapter 23: Lesson 23.1
• Electromagnetic interactions	<b>SE/TE:</b> Chapter 22: Lesson 22.2; Chapter 23: Lessons 23.1, 23.2; Chapter 23: Physics Lab