

Course: Pre-AP Physics			Designated Six Weeks: Sixth Six Weeks		
Unit: Optics and Modern Physics			Days to teach: 25 Days		
TEKS	Guiding Questions/ Specificity	Assessment	Vocabulary	Instructional Strategies	Resources/ Weblinks

<p>Optics</p> <p>(7) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: (D) investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect; <i>(EOC Readiness Standard)</i></p> <p>(E) describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens; <i>(EOC Supporting Standard)</i></p> <p>(F) describe the role of wave characteristics and behaviors in medical and industrial applications. <i>(EOC Supporting Standard)</i></p>	<p>Guiding Questions</p> <p>How do corrective lenses work?</p> <p>Specificity Use ray diagrams to predict image type and location.</p>	<p>Chromatic aberration is avoided in (a) converging lenses. (b) diverging lenses. (c) mirrors.</p> <p>When white light goes from air into water, the color that refracts the most is (a) red (b) orange (c) green (d) violet (e) all refract the same amount</p>	<p>Reflection</p> <p>Refraction</p> <p>Concave mirror</p> <p>Convex mirror</p> <p>Concave lens</p> <p>Convex lens</p> <p>Magnification</p> <p>Virtual image</p> <p>Real image</p>	<p>Inquiry labs</p> <p>Refraction Inquiry</p> <p>Lab: Convex Lens and Concave Mirror (Laying the Foundation)</p> <p>Camera Obscura (lab 79)</p> <p>ELPS:</p> <p>http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html</p> <p>1C: List/Sort/Label 1A: Think Aloud 2G: Book Reviews</p>	<p>Text: “Holt Physics” Serway and Faughn 2002</p> <p>Note packets, Laying the Foundations, Graph matching software</p> <p>Reflection, Refraction, and Mirrors http://physics.bu.edu/~duffy/py106/Reflection.html</p> <p>How Cameras Work http://www.islandnet.com/~yesmag/how_work/camera.html</p> <p>Doppler Effect http://galileoandainte.in.physics.virginia.edu/more_stuff/flashes/doppler.htm</p>
---	--	---	---	--	--



Course: Pre-AP Physics			Designated Six Weeks: Sixth Six Weeks		
Unit: Optics and Modern Physics			Days to teach: 25 Days		
TEKS	Guiding Questions/ Specificity	Assessment	Vocabulary	Instructional Strategies	Resources/ Weblinks

<p><i>College and Career Readiness Standards</i></p> <p>J. Optics</p> <p>3. Understand concepts of geometric optics.</p>					
<p>Magnetism (5) Science concepts. The student knows the nature of forces in the physical world. The student is expected to:</p> <p>(D) identify examples of electric and magnetic forces in everyday life; <i>(EOC Supporting Standard)</i></p> <p><i>College and Career Readiness Standards</i></p> <p>I. Electromagnetism</p> <p>7. Understand magnetic fields and their relationship to electricity.</p> <p>8. Relate electricity and magnetism to everyday life.</p>	<p>Guiding Questions</p> <p>How do domains form magnets?</p> <p>Specificity</p> <p>Field lines are strongest and closest together at the magnetic poles.</p>	<p>Outside a magnet, magnetic field lines are conventionally drawn from (a) north to south (b) south to north (c) either way</p> <p>Thrust a magnet into a coil of wire and the coil (a) becomes an electromagnet (b) has a current in it (c) both of these (d) neither of these</p>	<p>Domains</p> <p>Field lines</p>	<p>Project: Electromagnet Challenge</p> <p>ELPS:</p> <p>http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html</p> <p>1A: Think Alouds 3G: QAR 2G: Comprehension</p>	<p>Text: “Holt Physics” Serway and Faughn 2002</p> <p>Safari Montage:</p> <p>http://www.safarimontage.com/?gclid=CKq4k-nniqcCFZNd7AodASpyeA</p> <p>PhET:</p> <p>http://phet.colorado.edu/en/simulation/gravity-force-lab</p>

Course: Pre-AP Physics			Designated Six Weeks: Sixth Six Weeks		
			Days to teach: 25 days		
TEKS	Guiding Questions/ Specificity	Assessment	Vocabulary	Instructional Strategies	Resources/ Weblinks

<p>Quantum Mechanics</p> <p>(8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to:</p> <p>(A) describe the photoelectric effect and the dual nature of light; <i>(EOC Readiness Standard)</i></p> <p>(B) compare and explain the emission spectra produced by various atoms; <i>(EOC Supporting Standard)</i></p> <p><i>College and Career Readiness Standards</i></p> <p>J. Optics</p> <ol style="list-style-type: none"> 1. Know the electromagnetic spectrum. 2. Understand the wave/particle duality of light 	<p>Guiding Questions</p> <p>How do automatic doors in supermarket work?</p> <p>How does the remote control of your TV work?</p> <p>Is light a particle or a wave?</p> <p>Why do different elements have different spectra?</p> <p>Specificity</p> <p>Photons are packets or bundles of light and energy.</p>	<p>According to quantum physics, looking at a star through a telescope</p> <p>(a) affects the processes occurring in the star.</p> <p>(b) has no effect on the processes occurring in the star.</p> <p>Which has less energy per photon?</p> <p>(a) red light</p> <p>(b) blue light</p> <p>(c) both have the same energy</p>	<p>Black Body</p> <p>Radiation</p> <p>Absorption</p> <p>Emission Spectra</p> <p>Compton's shift</p> <p>Photon</p> <p>Photoelectric Effect</p> <p>Uncertainty Principle</p>	<p>Lab: Flaming Out</p> <p>ELPS:</p> <p>http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html</p> <p>3G: Perspective Based Activity</p> <p>3H: Question Answer</p>	<p>Text: "Holt Physics" Serway and Faughn 2002</p> <p>Black Body Radiation</p> <p>http://webphysics.davidson.edu/alumni/milee/java/bb_mjl.htm</p> <p>http://phet.colorado.edu/en/simulation/blackbody-spectrum</p> <p>Emission Spectra</p> <p>http://csep10.phys.utk.edu/astr162/lect/light/absorption.html</p> <p>Wave-Particle Duality</p> <p>http://hyperphysics.phy-astr.gsu.edu/hbase/mod1.html</p>
--	--	--	--	---	---



Course: Pre-AP Physics			Designated Six Weeks: Sixth Six Weeks		
			Days to teach: 25 days		
TEKS	Guiding Questions/ Specificity	Assessment	Vocabulary	Instructional Strategies	Resources/ Weblinks

<p><u>Radioactivity and Nuclear Reactions</u></p> <p>(8) Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena.</p> <p>(C) describe the significance of mass-energy equivalence and apply it in explanations of phenomena such as nuclear stability, fission, and fusion; <i>(EOC Supporting Standard)</i></p> <p>(D) give examples of applications of atomic and nuclear phenomena such as radiation therapy, diagnostic imaging, and nuclear power and examples of applications of quantum phenomena such as digital cameras. <i>(EOC Supporting Standard)</i></p>	<p><u>Guiding Questions</u></p> <p>How is a half-life calculated?</p> <p>What are some examples of atomic, nuclear, and quantum phenomena?</p> <p>How do astronomers know the composition of stars?</p> <p><u>Specificity</u></p> <p>Helium is produced in stars from the fusion of Hydrogen particles.</p>	<p>When Rutherford had a stream of alpha particles hit a gold foil, most of the particles</p> <p>(a) bounced back</p> <p>(b) went almost straight through</p> <p>(c) stopped</p> <p>(d) spiraled</p> <p>A radiation detector measures the radioactivity of a piece of radium by catching and counting alpha particles it emits. According to quantum physics, making this measurement affects the</p> <p>(a) radiation rate of the piece of radium</p> <p>(b) alpha particles that are caught</p> <p>(c) both of these</p> <p>(d) neither of these</p>	<p>Half-life</p> <p>Isotope</p> <p>Fission</p> <p>Fusion</p>	<p>Lab: Half-Life</p> <p>Project: Physics Exploration</p> <p>ELPS:</p> <p>http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html</p> <p>1E: Affixes, Roots and Cognates</p> <p>3B: Word Knowledge</p>	<p>Text: “Holt Physics” Serway and Faughn 2002</p> <p>Nuclear Science</p> <p>http://vod.esc11.net/videos/11303/pgr11303_256k.asf</p> <p>http://vod.esc11.net/videos/39383/chp949400_256k.asf</p>
---	---	--	--	--	---