

## IPC Curriculum Bundle #7



<b>Title</b>	<b>Suggested Dates</b>
<b>Light and Optics</b>	1/4-1/28 (19 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Light is an electromagnetic wave and can be placed on a spectrum according to frequency or wavelength. The properties of light allow it to be manipulated with lenses, mirrors and other optical devices.	Why is light the only form of energy that can be seen? How do optical instruments work?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>District Specificity/Examples</b>	<b>Suggested Resources</b> (See note above)
<b>Vocabulary:</b> electromagnetic spectrum, light intensity, optics, polarization, reflection, refraction, diffraction, mirrors, lenses, MRI, X-rays, radar, laser, visible light, microwaves, fiber optics		
<p><b>IPC.5 Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:</b></p> <p><b>5G</b> explore the characteristics and behaviors of energy transferred by waves, including acoustic, seismic, light, and waves on water as they superpose on one another, bend around corners, reflect off surfaces, are absorbed by materials, and change direction when entering new materials;</p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Illustrate the light spectrum</li> <li>• Explain the relationship between frequency, wavelength and speed of light in the EM spectrum</li> <li>• Explain color and color mixing</li> <li>• Explain how light frequency and wavelength apply to light intensity</li> <li>• Classify electromagnetic waves</li> </ul> <p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Evaluate the law of reflection</li> <li>• Describe light polarization and its uses</li> <li>• Apply reflection to mirrors and refraction to lenses</li> <li>• Ray Diagrams</li> </ul> <p><b>Teacher's Note:</b> Use ray diagram</p> <p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Speed of light</li> <li>• X-Rays</li> </ul>	<p>UV Beads Lab</p> <p><a href="http://www.kettering.edu/~drussell/Phys302/phys302.html">http://www.kettering.edu/~drussell/Phys302/phys302.html</a></p> <p>“Introduction to Light Lab (Polarization)” – <a href="#">Investigations in Physics and Chemistry</a></p> <p>Simple Laser and Mirror Lab</p> <p>Lens Lab</p> <p>The Optics of Mirrors Lab</p> <p>Light Box Lab</p> <p>Optical Illusions - <a href="http://www.michaelbach.de/ot/mot_adaptSpiral/index.html">http://www.michaelbach.de/ot/mot_adaptSpiral/index.html</a></p> <p>Light Math</p> <p>Color Lab</p>

## IPC Curriculum Bundle #7

- Laser
- Magnetic Resonance Imaging (MRI)
- Absorption
- Illustrate the diffraction waves (spectroscopes)
- Evaluate the law of reflection

Rods and Cones video