IPC Curriculum Bundle #7

Title	Suggested Dates
Light and Optics	1/5 – 1/29/2010 (16 days)

Big Idea/Enduring Understanding	Guiding Questions
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.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
5 The student knows the effects of waves on everyday life. **5A** Demonstrate wave types and their characteristics through a variety of activities. Such as • Modeling with ropes and coils • Activate tuning forks • Interpreting data on seismic waves	Including • Illustrate the light spectrum • Explain how light frequency and wavelength apply to light intensity • Classify electromagnetic waves • *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*	UV Beads Lab http://www.kettering.edu/~drussell/Phys302/phys302.html
5 The student knows the effects of waves on everyday life. **5B** Demonstrate wave interactions within various materials. Including • Interference • Polarization • Reflection • Refraction • Resonance	Including • Evaluate the law of reflection • Describe light polarization and its uses • Apply reflection to mirrors and refraction to lenses • Ray Diagrams Teacher's Note: Use ray diagrams	"Introduction to Light Lab (Polarization)" – Investigations in Physics and Chemistry Simple Laser and Mirror Lab Lens Lab The Optics of Mirrors Lab Light Box Lab

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		Optical Illusions - http://www.michaelbach.de/ot/mot_adaptSpiral/index.html
5 The student knows the effects of waves on everyday life. **5C** Identify uses of electromagnetic waves in various technological applications. Such as • Fiber optics • Optical scanners • Microwaves	Including • Radar (Doppler Effect) • X-Rays • Laser • Magnetic Resonance Imaging (MRI)	UV Beads Lab