Laser Technology
Activity Guide

Objectives

In this unit, students will:

1. Identify laser applications for industrial and communications operations, as well as daily life.
2. Use appropriate safety measures when using a laser in experimental practice.
3. Describe the characteristics of sound transmission using laser technology.
4. Describe the elements of physical properties of light and how these factors impact laser systems.
5. Describe how fiber optics are used in common and technological application.
6. Develop and apply the physical properties of lenses in laser application.

Day #	Activity #	Activity Description	Type of Activity
1	1	**Scattering of Light** Learn how fast light travels, how the human eye perceives light, and how light is a form of energy.	**Project**
1	2	**Light Through a Prism** Compare laser light to an ordinary light	**Project**
1	3	**Light, Color & Filters** Learn about the scientific description of light, the components that create sunlight and the way color filters affect laser light	**Project**
2	1	**Laser Safety** Explore the Laser Institute of America *Laser Safety Bulletin.* Write in Journal.	**Video**
2	2	**Total Internal Reflection** Recreate Tyndall's experiment with internal reflection	**Project**
3	1	**Laser as a Tool** Trace the history of the laser and provide information about many practical laser applications	**Video**
3	2	**Audio Receiver** Use the laser beam for communication. Show set up of fiber optic demo.	**Project**
4	1	**Looking at Lenses** Trace the history of the laser and provide information about many practical laser applications	**Reading**
4	2	**Measuring Focal Length** Determine the focal length of several lenses	**Project**
4	3	**Bending Light** Learn how light rays can be bent, how optical lenses work, and facts about the speed of light	**Project**
5	1	**Lenses** Explore lenses and focal point. Write in journal.	**Internet**
5	2	**Narrative Writing activity/on-screen multiple-choice test** Explain how you would use laser for a laser light show	**Test**
6	1	**Reflecting Light** Learn how mirrors are used to control and direct laser light in many industrial and military applications. Students should use the flashlight to aid in reading the submerged protractor. Complete worksheet.	**Project**

Days 7-10 continued on next page

Laser continued

Day #	Activity #	Activity Description	Type of Activity
7	**1**	**Beam Divergence** Compare how different types of light spread out as they travel. Complete worksheet.	**Project**
8	**1**	**Laser Technology** Explore uses for laser. Write in journal.	**Computer Program**
9	**1**	**X-Y Pattern Generator** Understand that laser technology requires complementary technology to create some of today's high-tech miracles. Show instructor set up.	**Project**
9	**2**	**Properties of Light** Program covers many areas that you have already studied, properties of light and practical laser applications. Draw a diagram of fiber optic use.	**Computer Program**
10	**1**	**Design Brief**	**Project**
10	**2**	**Persuasive Writing activity/on-screen multiple-choice test** Explain the need to upgrade the old wiring to the latest in technology communications	**Test**

NOTE: In the Design Brief for creating a security device, the light detector and a few mirrors can usually secure at least one doorway in the room or hallway.