

Distance Learning Module 9: Week of: June 8<sup>th</sup> – June 12<sup>th</sup>

## **Honors Physics - Modified from [Unit 12 Light & EM Radiation \(- Optics\)](#)**

### **Targeted Goals from Stage 1: Desired Results**

#### **Content Knowledge:**

##### **Optics:**

- The speed of light in a vacuum/air  $3 \times 10^8 \text{ m/s}$
- Light bends when it changes mediums.
- As a wave's frequency increases, its energy increases
- The smaller (wavelength) a wave, the more damaging it may be to cells, biological entities and biological molecules
- Different E-M waves have specific applications in society based on the wave's size and energy
- Visible light is a small portion of the E-M spectrum
- Light undergoes a Doppler shift and this can be used to understand celestial bodies
- Curved mirrors may make real or virtual images based on their geometry
- The refraction of light is responsible for visible phenomena such as mirages, rainbows and distortion of objects seen underwater
- Telescopes and microscopes are made by combining geometric optical devices (mirrors and lenses)
- Fiber optics and sparkling diamonds to name 2 make use of the total internal refraction of light
- Waves are diffracted when they pass through narrow openings; the Huygens principle explains the behavior of waves after they pass through these openings.

#### **Vocabulary: Snell's law**

- Refraction
- Diffraction
- Reflection
- Image

- Real Image

### **Skills:**

Apply understanding of various principles of physics studied during this course to investigate application of these principles to modern physics.

- Students will be able to apply the laws of reflection and refraction to calculate the position and size of images formed by lenses and mirrors.
- calculate the index of refraction of a material when given the speed of light in that material.
- Apply Snell's Law to a light ray moving from one medium to another.
- Determining the critical angle for light in different media

### **Expectation:**

Description of Task (s):	Resources and Materials:	Daily Checks (Return to Google Classroom or snapshots from a cell phone)
Monday: Students will be logging on to the Google Meets meeting and attending class on types of images based on mirrors	<ul style="list-style-type: none"> <li>• Weekly schedule that is posted on the Google Classroom</li> <li>• Notes that are posted on the Google Classroom</li> <li>• Posted videos - On Google Classroom</li> <li>• <a href="#">Light - Crash Course Video option #1</a></li> <li>• <a href="#">Light - Crash Course Video Option #2</a></li> <li>• <a href="#">Kurzgesagt video on light</a></li> <li>• UTexas</li> <li>• <a href="#">Physics Classroom Light</a></li> <li>• Textbook, posted on the Google Classroom</li> </ul>	Attendance of meeting
Tuesday: Students will attend meeting on	Same as above	Same as above

Description of Task (s):	Resources and Materials:	Daily Checks (Return to Google Classroom or snapshots from a cell phone)
images		
Wednesday: Students will watch videos on images/optics	Same as above	Same as above
Thursday: Students will log on to the optional zoom meeting, where we work out problems and work on conceptual understanding	Same as above	Attendance of meeting
Friday: Students will complete end of unit quest on Light	Same as above	Same as above Completion of UTexas Quest in general of 75% or higher

**Week criteria for success** (attach student checklists or rubrics):

- ☐ *Greater than 75 % on Assigned UTexas Assessments*

**Supportive resources and tutorials for the week** (plans for re-teaching):

- ☐ *Textbook; Finals site resources (Powerpoints, worksheets with answer keys, pdf notes); Khan Academy; Crash Physics videos; PHeT simulators from University of Colorado; Flipping Physics videos; Interactions with teacher using Zoom.*