Wednesday, June 7, 2023

Optics

12:15 to 12:30 Lasers and Laser Pointer Safety Adriana

12:30 to 1:00 The wave nature of light Laurie

Ask “What is light?” (Energy – ability to do work – what is work, move stuff heat &

push around)

Demo with Crooke’s Radiometer

Show video of solar car

Particle vs wave

Definitions, wavelength, constructive/destructive interference

Hubert’s strips

Online ‘Ripple Tank’

EM chart

measure UV and IR with the laser meter and rainbow

What part of the chart do you work with?

Interference patterns – laser with diffraction grating

Demo Interference pattern – cloth (Priscila Rosa did the hair measurement Tuesday)

1:00 to 1:30 Taking Light Apart and Putting it Back Together Laurie

Discuss rainbows – demo with glass of water

Make rainbows with triangular prism, collimator, and flashlight

Make rainbows with diffraction grating and flashlight

Demo how different colors bend differently (with lasers) time???

Combine colors and make white with colored flashlights

Talk about absorption of light

Also use colored flashlights with prisms

Discuss the Dress

“Step into the Rainbow” while playing with prisms

1:30 to 1:45 Break

1:45 to 2:15 Reflection and Refraction and Absorption and Scattering

Demo reflection/refraction with laser refraction tank Laurie or someone?

Total Internal Reflection (light guides, waterfall) Hubert

Introduce 5-laser/prism boxes, look at focal length, etc.

Index of Refraction

Grow spheres in water Laurie

Snell’s Law calculation Hubert

Laser Microscope with dirty water Laurie

Sky is blue tank (get the eggs) Laurie

2:15 to 2:45 Spectroscopy

Infrared and UV examples

Demo with IR/iPhone camera, UV

Look at Various objects with UV lights

RSpec Explorer with gas tubes and light tower

Show spectroscope examples

Use the spectroscopes they made as Tuesday night’s homework

Fluorescence and phosphorescence demos

Invisible ink pens and phosphorescent paper, write with blue laser