

Honors Physics Course Outline

Text: Serway, Raymond A. and Jerry S. Faughn. *Holt Physics*. Orlando: Houghton Mifflin Harcourt, 2012.

Materials: Throughout the course, basic physics lab equipment will be used. A scientific calculator is required for the course. Resources provided through the online textbook, as well as Internet resources, interactive websites, and iPad apps are also used. Class materials and vodcasts of class lectures are provided on *NCS Chemistry and Physics*, at <http://tskinnersbec.edublogs.org/>.

Fourth Nine Weeks

1. Light and Reflection (4 weeks)

A. Objectives

1. Properties of light
2. Color
3. Polarization of light
4. Law of reflection
5. Plane mirrors
6. Curved mirrors

B. Activities, Assessment, and Materials:

1. Experiment: Color
2. Experiment: Reflection
3. Experiment: Using Reflection to Calculate Height
4. Experiment: Concave and Convex Mirrors
5. Rube Goldberg Research Project
6. Engineering Design Challenge
7. Homework – chapter review and worksheets
8. Science in the News summaries
9. Test on chapter 13

C. Biblical Integration - God established consistent laws to govern all aspects of creation.

2. STEM Research Project (1 week)

A. Objectives

1. ExploreZone Project (odd years)
2. STEM Track to the Future (even years)

B. Activities, Assessment, and Materials:

1. Explore Zone interactive exhibit
2. STEM career website design - weebly.com

3. Refraction (3 weeks)

A. Objectives

1. Law of refraction
2. Converging and diverging lenses
3. Lens equations
4. Total internal reflection
5. Optical Phenomena

B. Activities, Assessment, and Materials:

1. Experiment: Pinhole Camera
2. Experiment: Refraction
3. Experiment: Concave and Convex Lenses
4. Rube Goldberg Research Project
5. Engineering Design Challenge
6. Homework – chapter review and worksheets
7. Six Flags – Amusement Park Physics group project
8. Science in the News summaries
9. Test on chapter 14

C. Biblical Integration – God has given us tools to use to understand the world around us. Genesis 1: 26 - 28

Revised 5/23/14