***Lesson Plans for the Week of: 3/20/17 Teacher: Hough Course: Physics Period: 3***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Elements of  a Lesson | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| Objective/  Focus/  Essential  Question | PH.8a,b;9b;12a,b,d  Understand sound in terms of a wave model | PH.8b,c  a) describe images formed by flat mirrors  b) correctly distinguish between real and virtual images  Students will identify the focal point and focal length of a mirror | PH.8c  a) Understand parabolic mirrors and the aberration that these mirrors avoid  b) Student will correctly apply the mirror equation | PH.8c  Students will understand the meaning of a material’s index of refraction  Students will understand the two types of lenses, their parts, and apply the thin lens equation | PH.9a,b;12a  a) recall general facts about electromagnetic (E/M) waves  b) apply wave speed equation to make calculations about E/M waves  c) identify one use for each type of E/M wave |
| Lesson/Act.  Type of Presentation | Summarize material from previous meeting’s videos:  1) Newton said light is made of particles; Young said that light is made of waves (proved it); de Broglie: wave particle duality—light is made of waves and massless particles, which are called photons  2) Wave particle duality applies to any small (atomic scale particle)—like electrons  3) We can only predict the probability of the location of an electron; Quantum mechanics requires an inverse relationship between the measurable location and the measurable momentum of a particle. The more accurately one determines the position of a particle, the less accurately the momentum can be known, and vice versa. This is known as the Heisenberg uncertainty principle.  Additionally, electrons were treated as standing waves in order to design the Bohr model of the atom. And explain hydrogen’s spectrum. | a) Review the image formed by a flat mirror  b) define virtual and real images  c) review the difference between concave and convex spherical mirrors  d)Explain the significance of the focal point,—explain how it works in a concave and a convex lens;  e) Define focal length and radius of curvature | a) Illustrate how law of reflection causes spherical aberration  b) use textbook to illustrate how a parabolic mirror eliminates these distortions  c) Explain the mirror equation and its parts (with significance of the negative values)  d) model use of the mirror equation, with magnification  e) no differentiation | a) explain refraction and index of refraction; compare index of refraction for air, water, diamond (refer to p. 484 chart)  b) lenses refract light; define converging and diverging lenses; position of image can be predicted using thin lens equation (emphasize importance of negatives and positives—table in textbook outlines this)  c) model use of thin lens equation, with magnification | a) define E/M wave; emphasize that all E/M waves travel at the same speed in a vacuum and they do not require a medium  b) refer to chart on p. 442 in textbook about frequencies/ wavelengths, and a list of applications  c) model use of wave speed equation sample p. 445#1  Preview of Monday:  A) Review the particles which make up an atom, particularly the fact that protons and neutrons are quarks and that electrons are elementary particles  B) Review the definition of isotope and the notation used to identify different isotopes, plus protons, neutrons, and electrons |
| Evaluation |  |  | homework |  |  |
| Extension/  Homework |  | no homework—will occur after the next lesson | Homework p. 458 #2,4 p. 462#2,4 | Homework: p. 495#2-4 | Homework: p. 445 #2-6 |
|  |  |  |  |  |  |

Materials:

Monday: Teacher-made notes; sound meter; multiple tuning forks

Tuesday: concave and convex mirrors

Wednesday:

Thursday: refraction tank; converging and diverging lenses

Friday: