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

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| Elements ofa Lesson | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| Objective/Focus/Essential Question | PH.8cUnderstand sound in terms of a wave model | PH. 8b,cUnderstand resonanceInvestigate fundamental and harmonic frequencies | PH.8b,cUnderstand light in terms of a wave model | PH.8b,cContinue from previous day | No School |
| Lesson/Act.Type of Presentation | 1) Review:Sound is a longitudinal waveReview amplitude, frequency, and wavelength in terms of longitudinal waves2) Pitch is determined by the frequency of the sound wave (demonstrate)3) Loudness (volume) is determined by the amplitude of the sound wave; given in decibels; logarithmic relation4) perception of loudness depends on frequency; elementary school/band musical experience and figure in textbook5) Doppler effect: train and ambulance as examples; model this with Doppler Gizmo | 1) Complete any concepts not finished in previous lessons2) Resonance: define and demonstrate using resonance box,Tacoma-Narrows Bridge3) describe how fundamental frequencies work; utilize simulations to investigate this4) practice math about fundamental and harmonic frequencies  | 1) Review:Light is a transverse waveReview amplitude, frequency, and wavelength in terms of transverse waves; relationship between wavelength and frequency2) Light is not a mechanical wave (It does not need a medium.).3) intensity of light is related to the amplitude of the light waves4) color of the light is related to the frequency of the light5) fun: color mixing with lights vs color mixing with pigments--lights mix (like in a concert)--pigments mix by subtraction | Continue from previous day | Emphasize pitch, volume, ultra- and infra-sound, Color, intensity? Light vs pigment |
| Evaluation |  | Classwork: fundamental and harmonic frequencies |  |  |  |
| Extension/Homework |  |  |  |  |  |
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Materials:

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

Tuesday: resonance box; Science World video of Tacoma-Narrows bridge collapse; <http://www.physicsclassroom.com/class/sound/Lesson-4/Fundamental-Frequency-and-Harmonics> and <https://phet.colorado.edu/en/simulation/legacy/fourier>

Wednesday: Teacher-made notes; colored LED lights; art pastels; computer Word program—the custom color window; or <https://phet.colorado.edu/en/simulation/color-vision>

Thursday:

Friday:

PH.8 The student will investigate and understand wave phenomena. Key concepts include

1. wave characteristics;
2. fundamental wave processes; and
3. light and sound in terms of wave models.