IB Physics

Topic 4 and 9– Simple Harmonic Motion and Waves

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| A/B | Class | Due on this class |
| 1  Apr 11/12 | -Intro to Simple Harmonic Motion (SHM)  -Kinematics of SHM | **Read:** 11.1,3 |
| 2  Apr 13/**14** | -Dynamics and Energy in SHM  -Resonance (Intro/Film)  -Resonance Demos/Destroying the School | **Read:** 11.2,4-6  **Check**1 **#1A: 11.1:** 1, 2, 6, 7, 11, 12 |
| 3  Apr 18/20 | -More Resonance | **Check #2A:** **11.1:** 16, 17, 21, 22 |
| 4  Apr 21/22 | -Intro to Waves: Frequency, wavelength and velocity | **Read:** 11.7  **Turn in: 11.1:** 1, 2, 6, 7, 11, 12, 16, 17, 21, 22 (Checks 1A, 2A) |
| 5  Apr 25/26 | -Types of waves /Energy Transport  -Reflections | **Read:**  11.8,9,11  Practice[[1]](#footnote-1): 11: 36(2.2 m/s), 37 |
| 6  Apr 27/28 | -Superposition and Interference patterns  -Young's double slit experiment (qualitative)  -Standing waves intro | **Read:** 11.12,13 23.2[[2]](#footnote-2)  Practice: 11: 38(190 m to 550 m, and 2.78 m to 3.41 m) |
| 7  Apr 29/  May 2 | -Standing waves frequency and wavelength  -Standing wave demos | **Read:** 12.4  Practice: 12: 46(343 Hz, 1029 Hz, 1715 Hz) |
| 8  May 3/4 | -The Doppler effect/Shock Waves  -Pass out FA 11.1, 12.1, 12.2 | **Read:** 12.1,2,3,5,6  **Check #1B:** **12.1:** 1a-c, 2a-c on front, 1, 2, 3 on the back |
| 9  May 5/6 | -Sound Introduction –-Beat formation  -Sound, Standing waves and Music  -Description of Sound lab | **Read:** 11.15, 24.5  **Check #2B:** **12.2:** 1, 3, 5, 9, 10 |
| May 9/10 | **Oaks Park Prep** |  |
| May 11/12 | **Oaks Park Prep** |  |
| **May 13** | **Oaks Park Day!!!!!!!** |  |
| May 17/18 | **Work on Presentations** | **Check #3B:** **11.1:** 3, 8, 13, 18, 23 |
| May 19/20 | **Work on Presentations** | **Check #4B:** **12.1:** 3a-c on front, 4, 5, 6, on the back |
| May 23/24 | **Work on Presentations** | **Check #5B:** **12.2:** 2, 4, 6, 7, 11, 12 |
| May 25/26 | **Oaks Park Presentations to Class** |  |
| 10  May 27/31 | **Summative Assessments on:**  **11.1 - Simple Harmonic Motion**  **12.1 - Standing Waves**  **12.2 - Doppler Effect** | **Turn In:** Checks 1B - 5B  **Turn In:** FA 11.1, 12.1, 12.2 |
| 11  Jun 1/2 | -Sound lab or SHM Lab - An eclectic group project | **Read:** 12.7,8  Practice: 11: 66(1.7x10-2 m), 12: 1, 30(0.656 m, 262 Hz, 1.31 m, and the same as in the pipe, 262 Hz, 1.31 m) |
| 12  Jun 3/6 | -Refraction in one dimension  -Solving refraction problems in two dimensions  -Total internal reflection and critical angle/dispersion  -Hand out FA 12.3 | Practice: 12: 34(closed, 88 Hz), 33, 49, 50(1710 Hz, 1420 Hz), 51  **Check:** Your lab plan  **Turn In:** Sound Lab |
| 13  Jun 7/8 | -Diffraction and resolution  -The Rayleigh Criterion  -Bats | **Read:** 11.14, 23.4  Practice: 12: 53, 54(3.09x104 Hz), 55  **Turn In:** FA 12.3 |
| 14  Jun 9/10 | -Properties of Electromagnetic waves  -Polarisation | **Read:** 23.5,6, 24.4  Practice #12: 23: 23, 24(1.31), 25 |
| Finals | **Cumulative Super Fun Final yay its so fun and i love it hyarney yarrr boys** |  |
| 4 Formative Assessments/3 Summative:   * 11.1 – Simple Harmonic Motion * 12.1 – Standing Waves * 12.2 – Doppler and interference * 12.3 – Refraction and interference (Formative Only)   2 Sets of formative homework - **Checks 1A, 2A**, and **Checks 1B-5B**  A Cumulative Final (Don't freak out - I will tell you exactly what is on it)  Two Labs:   * Sound lab – Your own procedure – done in class. No handout. * Oaks Park – Student presentations of analysis of work done at Oaks Park | | | Handouts:   * This Syllabus * Simple Harmonic Motion (worksheet) * Oaks Park   + Permission/Parent Letter   + Prearrange   + Oaks Park Lab * FA11.1 – Simple Harmonic Motion * FA12.1 – Standing Waves * FA12.2 – Doppler and interference * FA12.3 – Refraction and interference | |

1. "Practice" problems are optional. "Check" means you turn them in [↑](#footnote-ref-1)
2. Yes – this is not a typo. Chapter 23 starts on page 683, and 24 on 723. We jump around a bit in this chapter. [↑](#footnote-ref-2)