**IB Physics**

**Topic 3**: Kinetic Theory, Heat transfer and Thermodynamics Syllabus

Chapter 13, 14, and 15

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| Block | Class | Due on this class:  W13 – worksheet 13  Ch13 – problems from the book |
| 1  **Mar**  **6/7** | -Work on Temperature, pressure, pressure conversions, and basic Ideal Gas Law problems.  -Work on W13: 5,6,12,14,15-18,23-29, 30-38 | **Video Flip: 13: A-F (≈30 minutes)**  **Read:** 13.1-3,5,6-8  **Read:** 10.1,2 |
| 2  **Mar**  **10/11** | -Finish Ideal Gas, work on Combined Gas Law problems  -**Absolute zero practical lab.**  -Work on W13: 39-48 | **Video Flip: 13: G-H (≈12 minutes)**  **Read:** 13.11,12  **Check #1:** W13: 5,6,12,14,15-18,23-29, 30-38 |
| 3  **Mar**  **12/17** | -Work on specific and latent heat problems, and graph reading problems: W14:4-7, 12-14, 17, 18, 26-29, 30-33 | **Video Flip: 14: A-D (≈25 minutes)**  **Read:** 14.1-3, 5  **Check #2:** W13: 39-48  **Turn In:** Absolute Zero Lab |
| 4  **Mar**  **18/19** | -**PreQuiz 13.1 – Ideal Gas Law**  -Work on Calorimetry problems W14: 19-24 | **Video Flip: 14: E (≈13 minutes)**  **Read:** 14.4  **Check #3:** W14:4-7, 12-14, 17, 18, 26-29, 30-33 |
| 5  **Mar**  **20/21** | -**ST 13.1 – Ideal Gas Law**  -The four horsemen of heat transfer; conduction, convection, radiation, and evaporation or “How to not die of hypothermia” | **Check #4**: In Class: (W14: 19-24 in class)  At Home: (Ch13: 33, 34(323 liters, -63oC) Ch14:12(19.1oC), 25)  **Read:** 14.6-8 |
|  | Break Yay Spring Break Yay Spring Break Yay Spring |  |
| 6  **Mar 31/ Apr 1** | -The First law of thermodynamics  **-Newton's Law of cooling lab**  -Intro to Heat engines: heat, work and internal energy | **Read:** 15.1,2  **Check #5:** Ch13: 32(2.32 atm), 39 Ch14:14(283.6 J/kg oC), 15 |
| 7  **Apr**  **2/3** | -**PreQuiz 14.1 – Heat**  -Processes on PV diagrams – Isochoric, Isobaric, Isothermal and Adiabatic | **Read:** 15.5,6  **Check #6:** W15: 1,2,4-11  **Turn In:** Newton’s Law of Cooling lab |
| 8  **Apr**  **4/7** | -**ST 14.1 - Heat**  -Calculating work W = pΔV | **Read:** 15.5,6  **Check #7:** Ch13: 91ab, Ch14: 18(40.oC), 57 |
| 9  **Apr**  **8/9** | -**PreQuiz 15.1 – PV Diagrams**  -The three laws of Thermodynamics  -Statistical, conceptual, computational, and philosophical interpretations of entropy. | **Read:** 15.1,4,7-12  **Check #8:** W15: 20-28 |
| 10  **Apr**  **10/14** | -**ST 15.1 – PV Diagrams**  -Energy production current and future | **Check #9:** Ch15: 11, 12(-76 J, 24 J, 52 J, 28 J, 23 J) |
| 11  **Apr**  **15/16** | **Test on Topic 3** | **Turn In:** Homework (9 days) |

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| Three Prequizzes/Skill Sets:   * 13.1 – Ideal Gas Law * 14.1 – Heat and calorimetry * 15.1 – PV diagrams and work   Two Labs:   * Absolute Zero – as a class, graphing with uncertainty to determine absolute zero * Newton’s Law of Cooling – Exponential function of temperature, data taken by computer   Homework – 9 day’s worth!  Topic 3 test – I will tell you what kinds of questions to study in great detail. Study or you’re toast. | Handouts:   * This Syllabus * PreQuiz 13.1 – Ideal Gas Law * PreQuiz 14.1 – Heat and Calorimetry * PreQuiz 15.1 – PV Diagrams and work * Newton’s Law of Cooling Lab * Worksheets 13, 14, 15 |

Move to year 2