**IB Physics**

Heat and Thermodynamics Syllabus

Chapters 13, 14 and 15

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Block | | In Class : | Due on this class: | |
| **1**  **Sept**  **4/5** | | -Welcome back!!  -IA Research Projects!!  **DI**-Basic Kinetics - Temperature, TE, Heat,IE  **DI**-15B - Introduction to heat engines: Q, U, W | The Summer review of FA 13.1 and FA 14.1 | |
| **2**  **Sept**  **6/9** | | **DI**-15E-Laws of Thermodynamics  **DI**-13.1-Assumptions and units/Penk Challenge  **GW**-FA13.2 (13B&C)  **GW**-FA13.1, and W13.1 questions | **VF 13C** - Boltzmann's Equation  **VF 15F** - Energy Sources and Transformations | |
| **3**  **Sept**  **10/11** | | **SA 13.1 (first 30 minutes)**  **VF**-Videos 15C1&2, Solving W = PV problems  **DI**-Processes on PV diagrams (15D1) | Turn in FA 13.1 | |
| **4**  **Sept**  **12/13** | | **GW**-W15A: C #20-29 Work on PV  **GW**-W15B: G #1-4 Internal Energy  **GW**-W15B: H #10-13 Adiabatic P and V  **GW**-FA 14.1, and W14.1 questions | **VF 15C1&C2** - Work on PV diagrams (previously)  **VF 15G** - Internal Energy  **VF 15H** - Adiabatic P and V | |
| **5** Sept **16/17** | | **SA 14.1 (first 30 minutes)**  **VF**-15I Calculating Entropy  **DI**-15J1-Heat Engines Qh, Qc, W and efficiency | Turn in FA 14.1 | |
| **6**  **Sept**  **18/19** | | **GW**-W15B: I#16-18 Entropy  **GW**-W15B: J#29-37 Carnot  **GW**-FA 15.1 PV Diagrams | **VF 15I** - Calculating Entropy (previously)  **VF 15J2** - Carnot Cycle | |
| **7**  **Sept**  **20/23** | | **SA 15.1 (first 30 minutes)**  **VF**-15D2 Solving Thermodynamics Questions  **DI**-IB Thermo Questions M17-3-2 #9 | Turn in FA 15.1 | |
| **8**  **Sept**  **24/25** | | -Newton's Law of cooling lab  **GW**-IB Thermo Questions  **GW**-FA 15.2 | **VF15D2** - Solving Thermodynamics Questions (prev.)  Turn in your IA Research Proposal | |
| **9**  **Sept**  **26/27** | | **SA 15.2 (first 30 minutes)**  **IW**-Finish Newton's Law of Cooling  **GW-IB Thermo Questions** | Turn in FA 15.2  Turn in IB Thermo Questions  Turn in FA 13.2 | |
| **10**  **Sept 30/**  **Oct 1** | | **GW**-W14B  **GW**-IB Heat and Energy questions | **VF 14F** - Heat Transfer  **VF 14I** - BBR and Wien  **VF 14J** - Radiative heat transfer | |
| **11**  **Oct**  **2/3** | | **GW**-W14B  **GW**-IB Heat and Energy questions | **VF 14K** - Albedo  **VF 14L** - Greenhouse effect | |
| 12  **Oct**  **4/7** | | **DI**-Wind Power whiteboards  **GW**-IB Heat and Energy questions | **VF 15K** - Wind Power | |
| 13  **Oct**  **8/9** | | **IB Exam on Heat and Thermo** | Turn in IB Heat and Energy questions | |
| 5 Formative/ 4 Summative Assessments: (10 pts ea)   * 13.1 - Ideal Gas Law * 13.2 - Boltzmann's Equation (no SA) * 14.1 – Heat and calorimetry * 15.1 – PV diagrams and work * 15.2 – Carnot Cycle   IB Thermo Questions  IB Heat and Energy questions  One IB Exam (30 pts)  One Lab:   * Newton’s Law of Cooling – Exponential function of temperature, data taken by computer /40 pts | | | Handouts: | |