Atomic and Nuclear

Chapter 27, 28, 30, 31 Syllabus

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| **Block** | Class  | Due on this class[[1]](#footnote-1) |
| **1****Mar 11** | -Hubris at the end of the century-Einstein's particle theory of light-Photo-electric effect | **Read:** 27-1, 2, 3Bring your data booklet. |
| **2****Mar 15** | -de Broglie wavelengths and electron microscopes-Electron optics/photon interactions-Hand out Photoelectric Graph assignment | **Read:** 27-4, 7,8,9**Check #1[[2]](#footnote-2):** 27:10(5.87E-26 J), 11, 18(401 nm), 20(2.18 eV, 0.93 V), 21 |
| **3****Mar 17**St Patrick’s Day! | -Rutherford's atom and Closest approach -Nuclear radius-Bohr’s atom and atomic spectra | **Read:** 27-10,11,12,13**Check #2:** 27: 14(1.1E-27 kg m/s), 15, 22(0.93 eV, 5.7E5 m/s), 23, 24(Wo = 3.55 eV, a. 0.90 eV, b. no electrons) |
| **4****Mar 29** | -The Heisenberg uncertainty principle -The Einstein-Bohr debate-Lines and slopes on the Photo Electric Graph?? | **Video Flip: Photo Electric Graph (points and error bars)****Read:** 28-1,2,3,4,5**Check #3:** 27: 37, 41, 50(6 to 3), 52(488 nm, 103 nm, 435 nm), 77 |
| **5****Mar 31** | -Particle Physics – Accelerators-QED and field particles | **Read:** 32-1-3**Check #4:** 28: 3(1.3E-11m), 4(2.9E3m/s), 5(3.3E-8 ev), 6(1.3E-25 s)**Turn In: Graph of Photo-Electric** |
| **6****Apr 4** | -Particle Physics – Decays and conservation laws-“Six quarks for Muster Mark!” | **Read:** 32-4-9**Check #5:** 32: 3 |
| **7****Apr 6** | -Atomic Notation and Binding Energy | **Read:** 30-1,2 **Check #6:** 32: 3 |
| **Apr 8** | IB Review 7:00 – 8:00 | Data Packet/General tips for test/Work on sample test |
| **8****Apr 8** | -Radioactivity/Types of radiation-Alpha decay energy/Tunneling (Heisenberg Energy) | **Read:** 30-3,4,5,6,10,12**Check #7:** 30: 11, 12(7.48 MeV/nucleon), 13, 14(32.0MeV, 5.33MeV/Nucleon, 1.64 Gev, 7.87 MeV/nucleon) |
| **9****Apr 12** | -Half life-Decay rates | **Read:** 30-8,9,11**Check #8:** 30: 28a(6.11 MeV), Nuclear: C: P1-3, Q1, E: P1-2, Q1[[3]](#footnote-3) |
| **10****Apr 14** | -Nuclear Reactions-Nuclear Fission and Fusion-Build Your own Nuclear Weapon Lab | **Read:** 31-1,2,3**Check #9:** 30: 36(2.3 hr), 37, 38(1.2E9 decays/s), 39, 43, 44(4.3E16 nuclei, 2.9E15 nuclei, 6.5E13 decays/s, 26 min) |
| **11****Apr 20** | -Nuclear stability – The strong nuclear force -Decay Lab/Young’s Double Slit Lab | **Check #10:** 31: 5, 3, 11, 12(5.025 MeV, exo), Nuclear: M: 12 |
| **Apr 19** | **ACT Day/IB Review 9:00 – 2:00** | **Have your sample test finished by this day!!!!!!** |
| **12****Apr 22** | -Work on Decay lab-Work on Young’s Double Slit lab | **Check #11:** 31: 17, 22(3.7E-4 kg) |
| **13****Apr 26** | -Work on Decay lab-Work on Young’s Double Slit lab | **Turn In: HW27- 31:** 11 stamps! |
| **14****Apr 28** | **Summative Assessments on:** **27.1, 28.1, 30.1, 30.2** | **Turn In:** Decay Lab**Turn In:** Young’s Double Slit Lab |
| Assignments* 2 Labs:
	+ Photo-Electric Effect Graph – Graph data with uncertainty and best fit lines to determine the work function and Planck’s constant
	+ Decay Lab – Determine the half-life of a computer simulated nuclear decay
* 4 Formative/Summative Assessments
	+ 27.1 – Photons
	+ 28.1 – Atomic and particle
	+ 30.1 – Radioactivity
	+ 31.1 – Nuclear Reactions
* Homework from 11 days

A crazy actual IB test. (It will be as hard as H%$&.) I will tell you what is on it, and pls study!!!  | Handouts* FA27.1
* FA28.1
* FA30.1
* FA31.1
* This Syllabus
* Lab-NuclearDecay
* Lab-PhotoElectric
* Objectives A-F, G-O
* Nuclear Objectives A-S
* Many note guides
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1. Be careful – we skip around a lot from chapter to chapter in this unit. 27: means problems from Chapter 27. Your homework will be super important in this unit, you will need to work hard on it. [↑](#footnote-ref-1)
2. Label these “Check #1”, “Check #2” etc, and demarcate the “checks” with horizontal lines across the page. [↑](#footnote-ref-2)
3. These problems are on the Nuclear Objectives A-S sheet. P means problems, Q means questions. [↑](#footnote-ref-3)