IB Physics

Electrostatics and Field Theory - Chapter 16 & 17 Syllabus

|  |  |  |  |
| --- | --- | --- | --- |
| Block | In Class: | Due on this class: | If you miss this class: |
| 1**Nov** **2/3** | -Electric Charge-Coulomb’s Law -Electrostatics: Insulators, Conductors-Induced Charge/Stupid Van de Graaff tricks  |  | **Read:** 16.1-5 |
| 2**Nov** **4/7** | -Arrays of charges: Linear-Charge on conductors/Van de Graaff/Lightning Safety-Arrays of charges: Vectors | **Check:** A16.1 #11-17 | **Read:** 16.6 ex. 16.3**Watch:** Videos D |
| 3**Nov** **8/9** | -Electric Field/Gravitational Field-The Murray Compendium of Formulas-Electric Field addition: Vectors again | **Check:** A16.1 #21a,c, 22a,b,c,d | **Read:** 16.7-8**Watch:** Videos E,F,G |
| 4**Nov** **14/15** | -Voltage and Electric Field/Electron Volts-Voltage due to point charges: Not a vector-Video Flip next time - Millikan prep part 1 | **Check:** A16.1 #1-5, 21b,d, 22e,f | **Read:** 17.1-5**Watch:** Videos H,I,K,L**Watch:** Millikan Prep Part 1 |
| 5Nov 16/17 | -Conservation of energy problems-Video Flip next time- Millikan prep part 2 | **Check:** A16.2 #1-10, 11,12,16,17,18**Check:** A16.1 #6-10 (separate from 16.2)**Video Flip:** Millikan Prep (Part 0, 1)**Turn In:** A16.1 #1-17, 21a-d, 22a-f**Lab Check:** Millikan Prep (step size) #1 | **Watch:** Videos M,Q**Watch:** Millikan Prep Part 2 |
| 6**Nov** **18/21** | -More conservation of energy problems-Introduction to Capacitors - charge voltage energy-Video Flip next time- Millikan prep part 3 | **Check:** A16.2 #21a,c, #22e,f**Video Flip:** Millikan Prep Part 2**Lab Check:** Millikan Prep (q formula) #2 **Turn In:** A16.2 #1-10, 11,12,16,17,18, 21a,c, #22e,f | **Read:** 17.7-9**Watch:** Videos O,QGet notes from someone about the Millikan Lab |
| **Nov** **22/23** | **Show and Tell day for projects** | Demo your experimental apparatus/plan | Show it to me later. |
| 7**Nov** **29/30** | -Capacitors - energy and discharge-Video Flip N for next time | **Check:** A17.1 #1-4, 6-8, 9,10,14,15 **Video Flip:** Millikan Formula Part 3**Lab Check:** Millikan Prep (r formula) #3  | **Read:** 19.6 (yes, chapter 19)**Watch:** Videos P |
| 8**Dec** **1/2** | -Millikan Lab – write up/particulars/how to run-Electric Field Mapping lab-Equipotential lines/Field Lines and conductors-CRT Demo | **Check:** A17.1 #17-26, 27e,f**Video Flip:** CRT Problems (N)**Video:** Millikan Lab**Turn In:** Millikan prep**Turn in:** A17.1 #1-4, 6-8, 9,10,14,15,17-26, 27e,f | **Read:** 16-9**Read:** 17.10**Watch:** Videos J,N**Watch:** Millikan Lab videos |
| 9**Dec** **5/6** | -Work on labs | **Check:** Ch 16 #1, 3,12(+75µC: 147.2 N left, +48µC: 563.5 N right, -85µC: 416.3 N left)**Ch 17:** 65 | You might need to come in before or after school. |
| 10**Dec** **7/8** | -Work on labs | **Check:** Ch 16 #17(Q1 and Q2 only) (Q1: 0.30 N @ 265o, Q2: 0.26 N @139o), 28(8.4E7 N/C toward the negative charge), 36(29 cm)**Turn In:** Ch 16#1,3,12,17,28,36 | You might need to come in before or after school. |
| 11**Dec** **9/12** | -Work on labs | **Check:** Ch 17 #1, 5, 14(2.4E5 V), 21 | You might need to come in before or after school. |
| 12**Dec** **13/14**  | -Work on labs | **Check:** Ch 17 #35, 46(4.6E-4 J) ,65**Turn In:** Ch 17#1,5,14,21, 35,46,65 | You might need to come in before or after school. |
| 13**Dec** **15/16** | **Summative Assessments on:****16.1 - Coulomb's Law****16.2 - Vector Fields****17.1 - Voltage and Energy** | **Turn In: Electric Field mapping lab****Turn In: Millikan lab****Turn In: RC Circuit Lab****Turn In: FA 16.1, 16.2, 17.1, 17.2** | You will need to come in on a makeup day to take your assessments. |
| **Jan** **3/4** | Currents and Circuits |  |  |
| Assignments* 4 Labs:
	+ Electric Field Mapping – mapping with volt meters
	+ Millikan Prep – take home practical analysis
	+ Millikan Oil Drop Lab – simulation on the computer done in groups of 4
	+ RC Circuits Lab - a capacitor discharging
* 5 homework assignments:
	+ A16.1 #1-17, 21a-d, 22a-f (3 stamps)
	+ A16.2 #1-10, 11,12,16,17,18, 21a,c, #22e,f (2 stamps)
	+ A17.1 #1-4, 6-8, 9,10,14,15,17-26, 27e,f (2 stamps)
	+ Ch 16#1,3,12,17,28,36 (2 stamps)
	+ Ch 17#1,5,14,21, 35,46,65 (2 stamps)
* 4 Formative/3 Summative Assessments:
	+ 16.1 – Coulomb’s law, electric field, net force
	+ 16.2 – Vector electric field
	+ 17.1 – Voltage due to point sources, work.
	+ 17.2 – CRTs and Capacitors (no summative)
 | HandoutsLab - Electric Field Mapping LabLab - Millikan Oil Drop LabLab - Millikan PrepLab - RC CircuitsSyllabus - ElectrostaticsFA16.1FA16.2FA17.1FA17.2Worksheet-ProblemsFromA16.1Worksheet-ProblemsFromA16.2Worksheet-ProblemsFromA17.1Noteguide-FieldTheoryEquationsWorksheet-GravityVsElectricity |