IB Physics

Electrostatics and Field Theory - Chapter 16 & 17 Syllabus

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| Block | Class | Due on 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 | **Ch 16 Problems:** 1, 3[[1]](#footnote-1)  **Read:** 16.6 | |
| 3  **Nov 8/9** | -Electric Field/Gravitational Field  -Electric Field addition: Vectors again | **Ch 16 Problems:** 12(+75µC: 147.2 N left, +48µC: 563.5 N right, -85µC: 416.3 N left)  **Video:** D, E, F  **Read:** 16.7-9 | |
| 4  **Nov 14/15** | -Voltage and Electric Field/Electron Volts  -Voltage due to point charges: Not a vector  -Millikan prep – Numerical analysis - Video flips | **Ch 16 Problems:** 17(Q1 and Q2 only) (Q1: 0.30 N @ 265o, Q2: 0.26 N @139o)  **Video:** G, H, I, J  **Read:** 17.1-4, 10 | |
| 5 Nov 16/17 | -Conservation of energy problems  -Millikan prep –Formula for charge - video flip reminder | **Ch 16 Problems:** 28(8.4E7 N/C toward the negative charge), 36(29 cm)  **Video Flip:** Millikan Prep Numerical Analysis (Part 0, 1)  **Lab Check:** Millikan Prep #1  **Video:** K, L  **Read:** 17.10 | |
| 6  **Nov 18/21** | -Millikan prep –Formula for radius - video flip reminder  -More conservation of energy problems  -Introduction to Capacitors - charge voltage energy | **Ch 17 Problems:** 1, 5  **Video Flip:** Millikan Formula for charge/DA (Part 2)  **Lab Check:** Millikan Prep #2  **Video:** M | |
| 7  **Nov 22/23** | **Show and Tell day for projects** |  | |
| 8  **Nov 29/30** | -Capacitors - energy and discharge | **Ch 17 Problems:** 14(2.4E5 V), 21  **Video Flip:** Millikan Formula for radius/DA (Part 3)  **Lab Check:** Millikan Prep #3  **Video:** O  **Read:** 17.7,8,9, 19.6 | |
| 9  **Dec 1/2** | -Millikan Lab – write up/particulars/how to run  -Electric Field Mapping lab  -Equipotential lines/Field Lines and conductors  -CRT Demo | **Ch 17 Problems:** 35, 46(4.6E-4 J)  **Video Flip:** CRT Problems (N)  **Read:** 16-8  **Video:** Millikan Lab  **Turn In: Millikan prep** | |
| 10  **Dec 5/6** | -Work on labs | **Ch 17 Problems:** 65 | |
| 11  **Dec 7/8** | -Work on labs |  | |
| 12  **Dec 9/12** | -Work on labs |  | |
| 13  **Dec 13/14** | -Work on labs |  | |
| 14  **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: 16:** 1,3,12,17,28,36 **17:** 1,5,14,21,35,46,65 | |
| **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.   + RC Circuits Lab - a capacitor discharging * 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 | | | Handouts  Lab - Electric Field Mapping Lab  Lab - Millikan Oil Drop Lab  Lab - Millikan Prep  Lab - RC Circuits  Misc - IB Data Booklet  Misc - IBII Course Policy  Misc - IB Lab Criteria  Worksheet - AP Problems 1-4  Worksheet-Field Theory  Syllabus - Electrostatics |
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1. These are problems from chapter 16. They are on page 465 of your text. Be sure to do the Problems, and not the Questions that appear before them. Answers to odd questions are in the back of the book in appendix A. I give you the even answers in the parenthesis. There are help videos for these problems. (Or at least as I type this, I hope to post some...) I will check these off as we go, but you will turn these in together as a problem set at the end. Do careful neat work and clearly demarcate your problems with horizontal lines. [↑](#footnote-ref-1)