IB Physics

Electrostatics and Field Theory - Chapter 16 & 17 Syllabus

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| Block | Class | Due on this class | |
| 1  **Nov 5** | -Get textbooks  -Electric Charge  -Coulomb’s Law  -Electrostatics: Insulators, Conductors  -Ideas for research projects | **Read:** 16.1-5  **Bring:** calculator, paper, pencil | |
| 2  **Nov 9** | -Induced Charge/Stupid Van de Graaff tricks  -Arrays of charges: Linear  -Charge on conductors/Van de Graaff/Lightning Safety  -Research ideas | **Check #1:** 16: 1,3,5,7  **Read:** 16.6 | |
| 3  **Nov 16** | -Arrays of charges: Vectors  -Teaching/Research ideas | **Video:** Vector Forces (D)  **Check #2:** 16: 8(2.6E14, 2.4E-16 kg), 9, 12(75μC: 150 N left, 48μC: 560 N right, 85μC: 420 N left) Field Theory: LA 1 and 2 | |
| 4  **Nov 18** | -Electric Field/Gravitational Field  -Electric Field addition: Vectors again | **Video:** Field Theory + Vector Field (E, F, G)  **Check #3:** Field Theory: Vector Forces #1 and #2  **Read:** 16.7-9 | |
| 5 Nov 20 | -Voltage and Electric Field/Electron Volts  -Millikan prep – Numerical analysis - Video flips | **Video:** Voltage (H, I, J)  **Check #4:** 16: 23, 24(2.34E5 N/C South), 25 & Field Theory A1  **Read:** 17.1-4, 10 | |
| 6  **Nov 24** | -Voltage due to point charges: Not a vector | **Video:** Point Source Voltage (K)  **Video Flip:** Millikan Prep Numerical Analysis (Part 0, 1)  **Check #5:** Millikan Prep #1, 17: 1,3,5,9,11 & Field Theory B1  **Read:** 17.10 | |
| 7  **Nov 30** | -**PreQuiz 16-17.1 – Coulomb’s law**  -Millikan prep –Formula for charge - video flip reminder  -Cute voltage problems | **Video:** Work to Move in a Field (L, M)  **Check #6:** 17: 14(2.40E5 V), 15 & Field Theory B2, A2  **Read:** 17.10 | |
| 8  **Dec 2** | -Millikan prep –Formula for radius - video flip reminder  -CRT problems  -**Skill Set 16-17.1** | **Video:** CRT Problems (N)  **Video Flip:** Millikan Formula for charge/DA (Part 2)  **Check#7:**Millikan Prep #2 & Field Theory B3-4, A3-4 | |
| 9  **Dec 8** | -**PreQuiz 16-17.2 – Vector Field**  -More CRT problems | **Video Flip:** Millikan Formula for radius/DA (Part 3)  **Check#8:**Millikan Prep #3 & 17: 16(2.5 J), 18(5.8E5 V, 9.2E-14 J), 20(3.49E7 m/s)  **Read:** 17.5,10 | |
| 10  **Dec 10** | -Millikan Lab – write up/particulars/how to run  -Work on Millikan prep  -**Skill Set 16-17.2** | **Video:** Millikan Lab  **Check #9:** Field Theory C1-4, D16-19  **Turn In: Millikan Prep** | |
| 11  **Dec 14** | -Equipotential lines/Field Lines and conductors  -Electric Field Mapping lab  -Work on labs | **Video:** Electric Field Mapping lab??  **Check #10:** Field Theory C5-8, D20-23 | |
| 12  **Dec 16** | -**PreQuiz 16-17.3 – Point Charge Voltage**  -Work on labs | **Check #11:** Field Theory C9-11, D24-26 | |
| Dec 18 | Show and Tell day for projects |  | |
| 13  **Jan 5** | -**Skill Set 16-17.3**  -Work on labs | **Check #12:** Field Theory C12-15, D27-30 | |
| 14  **Jan 7** | -Work on labs | **Check #13:** AP #1, 2 | |
| 15  **Jan 11** | -Work on Labs | **Check #14:** AP #3,4 | |
| 16  **Jan 13** | Test on Chapters 16 and 17 | **Turn In: Homework (14 stamps)** | |
| **Jan 15** | Currents and Circuits | **Turn In: Electric Field mapping lab**  **Turn In: Millikan lab** | |
| Assignments   * 3 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. * 3 PreQuizzes/Skill Sets   + 16-17.1 – Coulomb’s law, electric field, net force   + 16-17.2 – Vector electric field   + 16-17.3 – Voltage due to point sources, work. * Homework from 14 days * A big test on the two chapters – check the website for review materials | | | Handouts  Lab - Electric Field Mapping Lab  Lab - Millikan Oil Drop Lab  Lab - Millikan Prep  Misc - IB Data Booklet  Misc - IBII Course Policy  Misc - IB Lab Criteria  Research - Description  Research - Proposal  Research - Syllabus for Fall  Teaching - Requirement  Teaching - Topic Presentations  Worksheet - AP Problems 1-4  Worksheet-Field Theory  Syllabus - Electrostatics |
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