Physics 253 Foundations of Physics  Spring 2007

\[ \int \mathbf{E} \cdot d\mathbf{A} = \frac{1}{\epsilon_0} Q_{\text{test}} \]
\[ \int \mathbf{B} \cdot d\mathbf{A} = 0 \]
\[ \int \mathbf{E} \cdot d\mathbf{r}' = -\frac{d}{dt} \int \mathbf{B} \cdot d\mathbf{A} \]
\[ \mathbf{H} \cdot d\mathbf{r} = \mu_0 I_{\text{ext}} + \mu_0 \frac{d}{dt} \int \mathbf{E} \cdot d\mathbf{A} \]

Instructor: Raymord Frey, Wil 405, 346 5873, rayfrey@uoregon.edu
Lectures: MTuWF 10:00-10:50, Locations: MWF - Pacific 30; Tu - Wil 110
Office hours: tba - defaults are: M: 11-12,2-4, W: 11-12, 2-4, F: 1-2:30
Text: Giancoli, Physics for Scientists and Engineers, 3rd Ed., Vols 1-5.
Cover Image | textbook web resources | Note: One copy is on 2-hour reserve at the Science Library
Co/Pre-requisite: Math 253 (or equivalent)
Labs: Physics 290 (recommended)
WWW: http://physics.uoregon.edu/~rayfrey/253/ (this page)
Grading: Midterm Exams I and II (35%), Homework (30%), Final Exam (35%) | current scores |
TA: Ricky Fok (rfok@uoregon.edu), homework grading
Office hours: Tu 11:00 Wil 218
Tutorial Sessions: tba
Other Resources: | Drop-in Help | Homework Solutions | Exams and Exam Solutions |

News/Announcements:
Mar 26 Note that the classroom has changed - see above

Lecture/Homework/Exam Schedule (to be updated continuously):

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic(s)</th>
<th>Text Chs.</th>
<th>Homework &quot;Problems&quot; from text</th>
<th>HW Due</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Apr 2-6</td>
<td>Electrostatics I: Coulomb's force; electric field, superposition; Gauss's &quot;Law&quot; (We will cover 21-11 (dipoles) later.)</td>
<td>21-22 #1: Ch 21: 2,3,3,32,40,41,42</td>
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<td>Fri Apr 6</td>
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<td>Apr 9-13</td>
<td>Gauss (contd); electric potential</td>
<td>22-23</td>
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<td>June 11</td>
<td>Final Exam</td>
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Course Description:
This term we will study electromagnetism (aka E&M). This corresponds to Chapters 21-32 of the text (Part 3).
We will start with electric charge, electric field, and potential; then steady currents and DC circuits; magnetic fields; finally getting into time dependent fields and the full Maxwell equations from which electromagnetic radiation was predicted. As recognized by Einstein, Maxwell's theory of E&M turned out to be fully consistent with Special Relativity, and so in this sense was the first modern physics theory.

Homework:
- Weekly homework will be assigned from the text and will be due as posted above.
- Students are required to show their work and reasoning as appropriate to receive full credit.
- You are welcome to work on the homework with your classmates, and please feel free to seek help from me. The work you turn in must be entirely your own, of course. (Note that the Physics Reading Room in Willamette Hall is available to use to collaborate on assignments, discuss deep thoughts, etc.)
- Complete solutions will be available from this web site soon after the due date. Please refer to these.
- Late homework penalties.

Exams:
There will be two midterms and one final exam. Exams will be closed book, but the generally useful equations and information will be provided.
Problem solutions need to include all work necessary to demonstrate the result. Practice exams and solutions will be provided approximately one week before an exam. The dates for midterms will be announced at least 8 days before the exam.