Welcome to Physics 142

This is an introduction to electromagnetism for honors students. It is design for students intending to be physics/astrophysics majors. Other students with a strong background in basic mechanics and who feel comfortable with basic calculus are welcome.

- electrostatics
- electric potential
- magnetostatics
- electric and magnetic fields in matter
- current
- capacitors
- energy in electric and magnetic fields
- AC and DC circuits
- induction
- Maxwell’s equations
- electromagnetic waves
- Relativity
- Geometric optics

Surgeon General’s warning: No matter what you’re smoking, this is not your high school course.
Name
University ( \text{\texttt{at}} \text{mail} \ldots ) \text{email address}
Year: Fr/So/Jr/Sr?
Projected major
What do you want to be doing for a career ten years from now?
What do you think is the most beautiful and influential creation of the human mind to date?
Maxwell’s equations in integral form

\[
\oint E \cdot d\vec{a} = \frac{Q_{encl}}{\varepsilon_o}
\]

\[
\int_s B \cdot d\vec{a} = 0
\]

\[
\int_c E \cdot d\vec{l} = -\frac{d\int_s B \cdot d\vec{a}}{dt}
\]

\[
\int_c B \cdot d\vec{l} = \mu_o I_{encl} + \mu_o \varepsilon_o \frac{d\int_s E \cdot d\vec{a}}{dt}
\]
Components of the course:

Lecture

Concepts, depth, association with the rest of life, other disciplines, systematic technique, gotchas, class issues, hints, some problem solving
Components of the course:

Lecture

Lab

Run independently. Part of your P142 grade. Must do all 5 labs to get a grade in P142.
Components of the course:

- Lecture
- Text
- Lab

More depth and associations, different approach, problems, not a substitute for lecture or doing problem sets
Components of the course:

- Lab
- Text
- Problem sets

Absolutely critical that you struggle with them and follow thru on particular personal questions/issues, taken up and partially graded (for effort), solutions (perhaps cryptic) released, you must follow thru.
Components of the course:

- Lecture
- Text
- Lab
- Workshop

Problem sets

My way to help you help yourself!
Components of the course:

- Lecture
- Text
- Lab
- Workshop
- Problem sets
- A chance to teach it yourself and explore some things not in the text, you will evaluate the presentations
- Presentation
Components of the course:

- Lecture
- Text
- Problem sets
- Workshop
- Lab
- Exams
- Presentation
Components of the course:

- Online applets
- Lecture
- Text
- Workshop
- Lab
- Exams
- Problem sets
- Presentation
- PRS
### Evaluation:

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Each scheme calculated, best average sets your place on the numerical curve

I place grade boundaries on numerical curve
More stuff:

E-mail list

Workshops begin next week. Schedule set tentatively. Have to check that my TA’s can make the times.

Office hours: B&L 203E, Mon 3:30-4:30 and Tuesday 1:30-3:00, TA office hours not yet set

Problem sets and solutions: PS #1 is on the web (or will be soon) and is due Sept. 13!

Lab schedule already set …

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