

PH-431/531 Electricity and Magnetism I

Fall 2006

Lecture: Tue, Thu 12:00 - 1:50 pm, Building: SB2, Room: 104

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Office Hours: Tue 3-4 pm, or by appointment

Course URL: <http://web.pdx.edu/~mjoler/ph431.htm> , <http://webct.pdx.edu>

Textbook: David J. Griffiths, *Introduction to Electrodynamics*, 3rd ed., Prentice Hall, 1999.

Course Goal: To gain knowledge of electrostatics, and the tools and techniques pertinent to it

Tentative Realization of Class (will be adjusted based on ongoing progress)

Day	Content
Sep. 26	Introductory Remarks; begin Ch. 1
Sep. 28	Ch. 1
Oct. 3	Ch. 1
Oct. 5	Ch. 1
Oct. 10	Quiz on Ch. 1; begin Ch. 2
Oct. 12	Ch. 2
Oct. 17	Ch. 2
Oct. 19	Ch. 2
Oct. 24	Ch. 2
Oct. 26	Ch. 2
Oct. 31	Quiz on Ch. 2; Midterm-related Q's; (begin Ch. 3)
Nov. 2	Midterm
Nov. 7	Ch. 3
Nov. 9	Ch. 3
Nov. 14	Ch. 3
Nov. 16	Quiz on Ch. 3; begin Ch. 4
Nov. 21	Ch. 4
Nov. 23	No Class (Thanksgiving Day)
Nov. 28	Ch. 4
Nov. 30	Ch. 4; Final-related Q's; Closing Remarks
Dec. 7	Final 12³⁰ - 14²⁰

Grading:

Homework	20%
Each Quiz	10%
Midterm Exam	20%
Final Exam	30%

Optional:

1) Recitation: Once a week, I offer a recitation class (60 min) in which I will solve a few problems to help student understanding of the matter, and problem-solving skills

2) Paper: submit a paper for an extra credit (up to 5 points added to your (sub)final score)

Due: Nov. 30

Format: single column, double-spaced, 11 size font (for body text), not more than 10 pages*

Topics: choose **one** of the following topics:

The Life and Legacy of C. A. Coulomb

The Life and Legacy of O. Heaviside

The Life and Legacy of S.-D. Poisson

The Life and Legacy of P.-S. Laplace

The Life and Legacy of J. C. F. Gauss

The Life and Legacy of R. Feynman

* append a list of references at the end of the text and adequately cite the sources of your statements/data/figures throughout the text, just as it is common in scientific papers

3) Leisure Time Physics Reading: R. P. Feynman, *Surely You're Joking, Mr. Feynman!*

One of the famous science books of our time...buzzes with energy, anecdote, and life.

Richard Feynman (1918-1988), winner of the Nobel Prize in physics, thrived on outrageous adventures. Through a series of short anecdotes, the book takes you from his childhood and his first "experiments" to his college years and mature scientific work. Here Feynman recounts his experience *trading ideas on atomic physics with Einstein and Bohr, and ideas gambling with Nick the Greek; cracking the uncrackable safes guarding the most deeply held nuclear secrets; accompanying a ballet on his bango drums... and much else of an eyebrow-raising nature.*

In short, in this series of Feynman's life anecdotes, a reader is rewarded with a laughter, yet with some general wisdom of life, beneficial for any one of us, that is contained in almost every anecdote.

Various Remarks:

- the overall examination is diversified such that you have more opportunity to earn credits through a variety of tasks (theory, problem solving, and extras) and/or make up for (eventually) a lower score on any part of examination
- Quizzes: have a purpose of fostering your study of theoretical aspects; the quizzes will primarily test your knowledge/understanding of theory (e.g. definitions, rules, equations, properties)
- Homeworks: please no late HWs; late HWs will receive a reduced credit unless prior arrangements have been made; student discussions about the problems welcome, but do your own work
- thoughtful use of CAD tools (MATLAB, Maple, etc.) encouraged, but a student needs to show the procedure, i.e. use CAD to help you calculate, not calculate for you
- feel free to email your impressions & suggestions about the course to the instructor