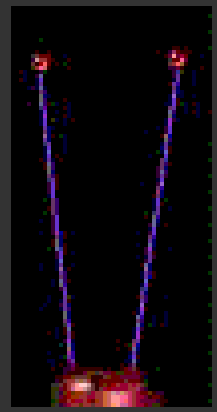
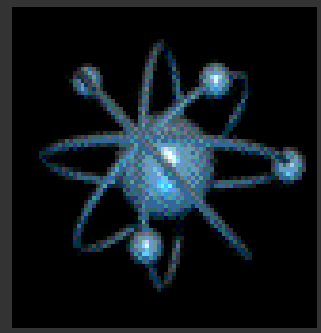
Welcome to Physics 114

This is an introduction to electromagnetism, optics and modern physics for science majors who are not majoring in physics or engineering.

- electrostatics
- electric potential
- magnetostatics
- electric and magnetic fields in matter
- current
- capacitors
- energy in electric and magnetic fields
- DC circuits
- induction
- Maxwell's equations
- electromagnetic waves
- geometric and physical optics



- quantum mechanics
- atomic physics
- nuclear physics
- relativity



Surgeon General's warning: No matter what you're smoking, this is not your high school course.

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steven.manly@rochester.edu

http://web.pas.rochester.edu/~manly/class/P114_2006/

Name

University (@mail …) email address

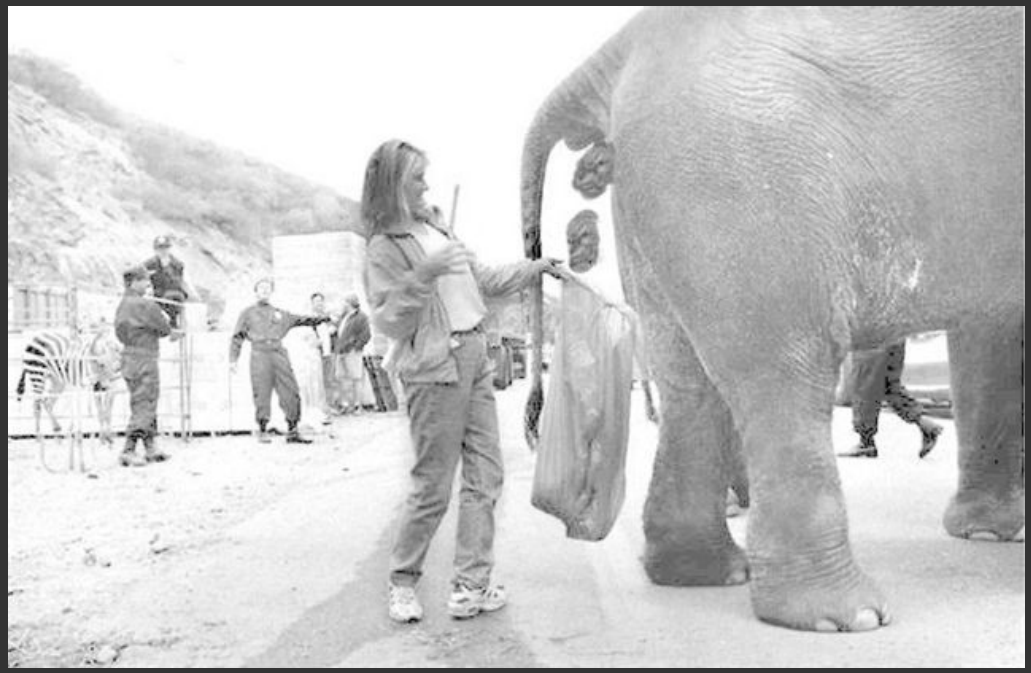
Year: Fr/So/Jr/Sr?

Did you receive the email I sent earlier in the week to the class listserve? Yes/No If "No", provide SID

Favorite midnight snack

Why are you in this course?

Smile! Your lot in life could be worse.



The essence of chemistry is
electromagnetism + quantum mechanics

X-rays, mass spectroscopy, visible light spectroscopy, IR spectroscopy, nature of the chemical bond, CAT scans, NMR of all sorts, EKG, nerve function, cell phones, elevator motors, ambulance lights, microscopes, dental drills, surgical lights, electrophoresis, carbon-14 dating, LASIK, laser surgery, radionuclide labeling, radiation treatments of cancer with beams and with implanted sources, mp3 players, radios, televisions, cathode ray tubes of all sorts, defibrillators, computers, digital imaging, cameras, copy machines, refrigerators, heaters, power from the wall, heating espresso, PIXUS, automatic toilets, microwaves, CD's, DVD's, streaming video, Napster, Ipods, any aspect of the internet, optical fibers, telephones, electric power transformers, credit card information stored in magnetic strips, bar code scanning, signal cables, eye glasses, MRI, contact lenses ….

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 P114 grade. Must do all 5 labs to get a grade in P114.

Components of the course:

Lecture

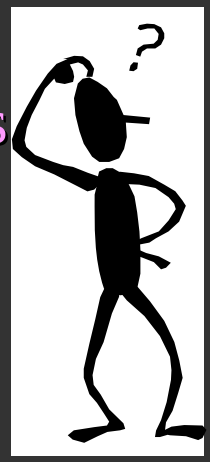
Text

More depth and associations, different approach, problems, not a substitute for lecture or doing problem sets

Lab

Components of the course:

Problem sets



Lecture

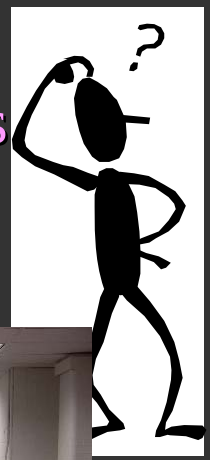
Text

Lab

Absolutely critical that you struggle with them and follow thru on particular personal questions/issues, one problem (random) graded, solutions released, you must follow thru

Components of the course:

Problem sets



Lecture

Text

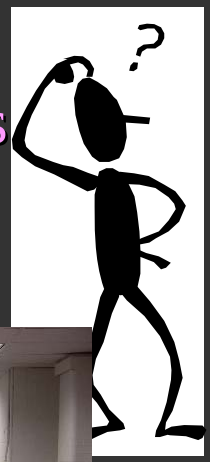
Workshop

Lab

My way to help you help yourself!

Components of the course:

Problem sets

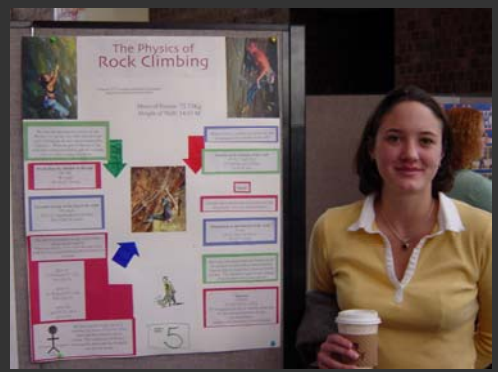


Lecture

Text

Workshop

Lab

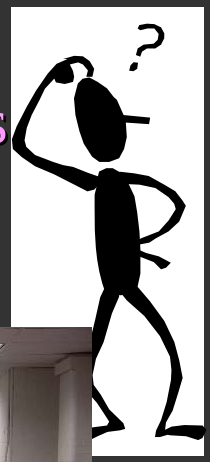


Project

A chance to explore some things not in the text, you will evaluate the projects

Components of the course:

Problem sets



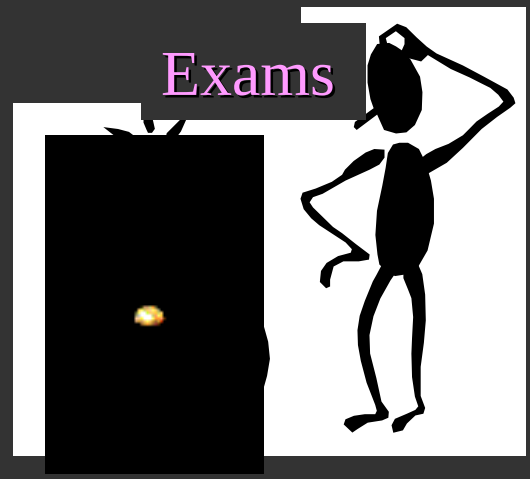
Lecture

Text

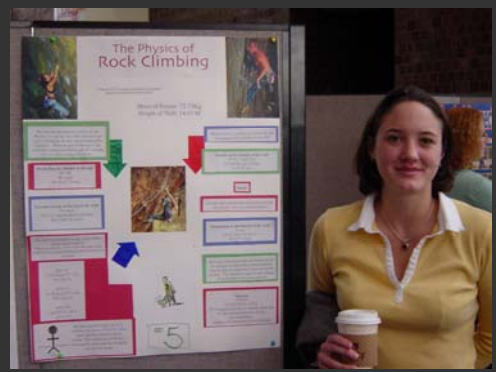
Workshop

Lab

Exams



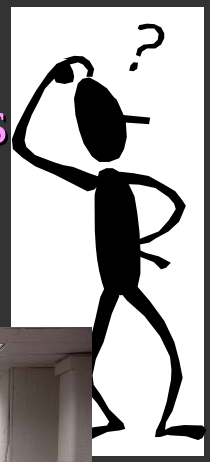
Project



Components of the course:

Online interactives

Problem sets



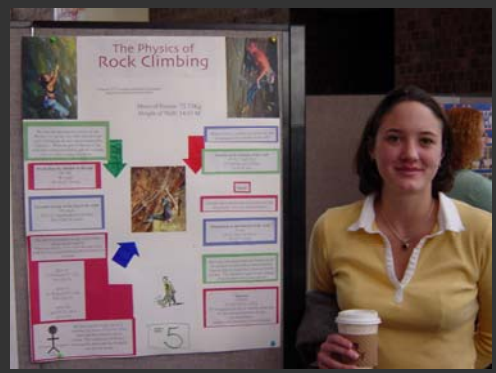
Lecture

Text

Workshop

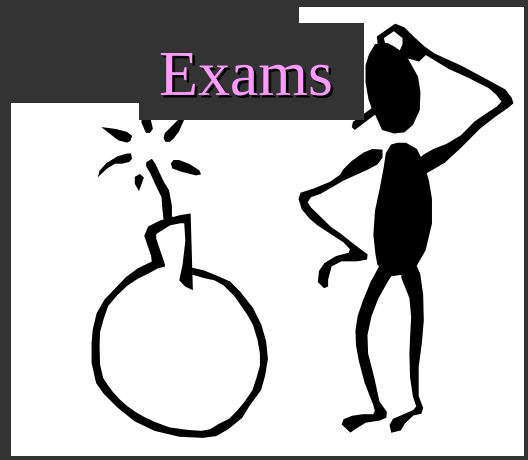
PRS

Lab



Project

Exams



Evaluation:

Scheme	Exam 1	Exam 2	Exam 3	Final exam	Lab	Prob sets	Project	PRS
1	---	16%	16%	32%	13%	9%	13%	1%
2	16%	---	16%	32%	13%	9%	13%	1%
3	16%	16%	---	32%	13%	9%	13%	1%
4	16%	16%	16%	16%	13%	9%	13%	1%
5	18%	18%	18%	23%	13%	9%	---	1%

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

I place grade boundaries on numerical curve

Does workshop work?

1999 P114 split class experiment:

41 students assigned to workshops, 110 assigned to recitations

Random assignments (all but 2 students in class wanted wkshops)

Ignored drops

B- or better →

>5 workshops = 93%

recitation+(<6 workshops) = 63%

Not split classes but …

	P113 2002	P121 2003	P114 2004
n	169	186	133
attend >7 wkshps	69%	54%	67%
B- or better >6 wkshp	77%	80%	88%
B- or better <=6 wkshp	40%	47%	40%

The 10 Commandments of P114:

- Thou shall come to class.
- Thou shall read the text.
- Thou shall do the problem sets (the right way!).
- Thou shall ask questions.
- Thou shall attend workshop.
- Thou shall participate in workshop.
- Thou shall strive to understand what is behind the problems and what thou dost wrong on them.
- Thou shall keep up with the class.
- Thou shall not CRAM for exams.
- Thou shall talk to ME the moment you sense impending doom.

For those of you who like to pick and choose the commandments you follow ….

The really, really important ones ...

And the keys to ***POST-PHYSICS NIRVANA*** are

Problem sets (the right way)

Workshop

Don’t cram

P114 vs. P113 for typical student

Expect to be less “comfortable” during most of the first half of P114

Grit your teeth and stick with it. You will become more comfortable

Get help early

Do *not* start putting off the course due to your discomfort

More stuff:

E-mail list

Workshops begin week of January 30 and workshop section signup begins soon, will send email with link

Office hours (Manly: Tues 2-4 pm or by appt., TA's: office hours TBA on web site)

Problem sets and solutions: PS #1 is on the web (or will be soon) and is due Jan. 26!

Lab start time information will be forthcoming

physlabs@pas.rochester.edu