

Schedule

- Get pretest
- Take pretest
- Class starts at 10:20

Welcome to Physics 361

Dr. Patrick Kohl

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CTLM 224

303-384-2303



Quick plug

- CBEN 411, Neuroscience, memory, and learning
- Dendy Sloan & Cynthia Norrgran
- Prereqs: Chem I/II, Phys I/II, BIOL110, CBEN303

Office hours

- MW: 3:00pm – 4:00pm
- R: 10:00am – 11:50am,
2:00pm – 3:00pm

And by appointment

TA: Derek Fogel,
dfogel@mymail.mines.edu

TA hours: TBD

Syllabus and Schedule

- Course Website:
http://ticc.mines.edu/csm/wiki/index.php/PHGN-361_Spring-2016
- This is a wiki and will include the syllabus, all homework assignments, a schedule, and so on

Clicker Registration

- Everyone needs to register their clickers on the iClicker website.
- Everybody gets two free clicker days. Please do not panic regarding your participation score if you are going to miss two or fewer days.

Absence Policy

- Excused absences require documentation
Note from school/dean/doctor
- Good: “I had the flu and went to the student health center. Here is my note.”
- Bad: “I felt bad. Can I has excused absence?”
- Absences excuse lecture credit, but not homework or responsibility for exams.

Grading

- Lecture participation: 5 %
- Reading: 5 %
- Homework: 30 %
- Exams: 60% total

- You do not get to drop the lowest exam, etc.

This is an upper-division class. Numerical averages could be low. That doesn't mean grades will be. Everything will be substantially curved if necessary. It will, however, remain possible (if difficult) to fail, and As are not automatic.

Reading the book

- You are required to read the assigned book section before coming to lecture.
- I guarantee this will save you time and effort in the long run.
- We will use the honor system: At the end of the year, I will ask you how often you read the book on a 1-5 scale.

Homework

- Points are assigned substantially based on explanation, diagramming, and presentation. I will post examples of my own homeworks on the wiki.
- Working together is okay. Identical turn-ins are not okay. Using online (or offline) solutions manuals or stashes is specifically forbidden.
- If you want to contest a score, contact the grader. You may appeal the decision to me if you have a good reason.

Academic Integrity

- Don't cheat. That includes:
 - Turning in identical homeworks
 - Using someone else's clicker for them
 - Finding solutions manuals online, offline, etc
- Currently, the recommended penalty for *any* academic dishonesty is an F in the course
 - I have a *lot* of practice with this

Oral exams

- 2nd or 3rd exam of the semester. It will involve a 15-20 minute Q&A with me one-on-one.
- Oral qualifying exams and technical interviews are commonplace in grad school and industry.
- This is a critical but generally neglected part of your undergraduate education.
- Grading will be simplistic to minimize stress.

Exam schedule

- Options: two exams plus final
 - Half of class takes oral for first, half for second

- Options: three exams plus final
 - Half of class takes oral for second, half for third

Course representative

- Members of the class designated to bring comments/concerns to me, probably via meetings every other week-ish

Announcements

- First homework is posted on the wiki, to be turned in at the start of Friday the 22nd
- Reading assignments will be posted on the wiki before each lecture
- Bring your clicker. Points count on Monday

Electromagnetism: A theory about charges + photons

Lorentz force law

Classical, macroscopic theory

Kinds of fields

$$\nabla \cdot \vec{E} = \rho / \epsilon_0$$

Gauss's law

$$\nabla \cdot \vec{B} = 0$$

no source of divergent B-fields, no Dirac monopole sources of fields

$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

Faraday's law

$$\nabla \times \vec{B} = \mu_0 \vec{J} + \mu_0 \epsilon_0 \frac{\partial \vec{E}}{\partial t}$$

Ampere - Maxwell equation

$$\vec{F} = q(\vec{E} + \vec{v} \times \vec{B})$$

Maxwell equations:

How sources make fields

How fields affect sources