

Physics 8: Course Outline

Spring Quarter, 2006

Website: physics.ucsd.edu/~tmurphy/phys8/

- Week 1: (Apr. 4)
- Course introduction, structure, goals.
 - Newton's laws of motion, force, acceleration, energy, power
- Week 2: (Apr. 11)
- The flow of energy, human energy and exercise
 - Springs, oscillations, resonance, molecular model
- Week 3: (Apr. 18)
- Electric forces, electric fields, current
 - Bulbs: blackbody radiation, resistors, voltage, power
- Week 4: (Apr. 25)
- Bulbs Gone Wild: complex circuits and Ohm's law
 - AC electricity: transformers, diodes, rectification
- Week 5: (May 2)
- Sound: waves, speakers, ears
 - **Midterm Exam:** May 4; 2:00 PM WLH 2005
- Week 6: (May 9)
- Sound waveforms, sampling, digital representation: CDs, DVDs
 - Transistors, logic functions, binary arithmetic, computers
- Week 7: (May 16)
- Electromagnetic Radiation: antennas, polarization, AM vs. FM
 - Cell phones, GPS, microwaves, heating food, Faraday cages
- Week 8: (May 23)
- TV: electron beams, painting the picture, encoding, remote controls
 - Optics: reflection, refraction, lenses, cameras, the eye
- Week 9: (May 30)
- Light and the perception of color, color combination
 - Natural optical phenomena: weird stuff you see
- Week 10: (June 6)
- Up for grabs 1
 - Up for grabs 2

Final Exam: Wednesday, June 14, 3:00–6:00 PM; WLH 2005

Grading Scheme

- 25% on weekly homework; due Thursdays
- 10% based on bi-weekly submission of questions/observations (via WebCT). Half credit if turned in late, no later than a week late; due Fridays on **even-numbered** weeks
- up to 15% based on classroom participation via transmitter (taken out of midterm/final allotments, reducing weight of worst exam)
- 30% based on midterm (15% if full classroom credit is used toward midterm)
- 35% based on final (20% if full classroom credit is used toward final). Final is weighted heavily toward topics of second half

Grades will be curved to fairly represent student capabilities

Required Textbook:

How Things Work: The Physics of Everyday Life, 3rd edition, by Louis A. Bloomfield, Wiley, 2006

Transmitter Required:

For class participation credit, purchase a transmitter from the bookstore. See class web page <http://physics.ucsd.edu/~tmurphy/phys8/phys8.html> for more details.

Class Meeting Times:

Lecture: Warren Lecture Hall (WLH) 2005, TTh 2:00–3:20 PM

Discussion: Center Hall 214, W 4:00–4:50 PM (focus on concepts, mock quizzes, some HW)

Problem: CSB 002, W 7:00–7:50 PM (focus on homework, exam study)

Professor Contact and Office Hours:

Professor: Tom Murphy

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Phone: 858.534.1844

Office: SERF Building, Room 336 (building number 930)

Hours: Thursday 11:00 AM–noon, or by appointment

Teaching Assistant Contact and Office Hours:

TA: Matt LeBourgeois

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Office: Mayer Hall, Room 2101

Hours: Wednesday 2:00–3:00 PM