- **Theme Music: John Coltrane**
  Welcome
- **Cartoon: Jorge Cham**
  Piled Higher and Deeper

This week

- New people –

  - Please come to tutorial section this week to take a Physics I diagnostic test and have your pictures taken. The test will identify any problems you might have about the basic concepts that I need to assume you know.
- Wednesday we will go over my approach in detail (with examples from the 121 class).
- Friday we will go review the core concepts of 121 using the examples from the sample problems given this week.

Outline

- Main theme
- Class content
- Class structure
- What makes it different?

Main Themes

- The main theme of the first semester:
  - ***How do things move?***
    - How do we describe motion?
    - What do we have to pay attention to in order to understand motion?
    - What rules govern how states of motion change?
- The main theme of the second semester:
  - ***What is the nature of light?***
    - Since light turns out to involve the oscillation of electric and magnetic fields, we have a lot to study.

Class Content

- Oscillations and waves on strings/springs
- Optics
  - Geometric (lenses and mirrors)
  - Physical (interference and diffraction)
- Electrostatics/Electric current
- Basics of magnetism
- Pulling it all together
  - Electromagnetic Waves
  - Photons

Elements of the Class

- Electronic info
- Recommended texts
- Grading
- Lectures
- Homework
- Tutorials
- Labs
- Exams

Electronic info

- Our home page is where you can get all of the information about the class.

http://www.physics.umd.edu/courses/Phys122/Redish/

- Non-public info (such as HW solutions) appear on our Blackboard site.

http://elms.umd.edu

- We have a listserve. If you have not yet received any messages, send me an email with a preferred address.

Recommended Texts (NOT required)

- Knight, Jones, & Field, *College Physics*, Prentice Hall
- Touger, *Introductory Physics: Building Understanding* John Wiley & Sons
- Cummings et al., *Understanding Physics*, John Wiley & Sons (*some chapters are available on our BlackBoard/ELM site*)

Why I don't require you use a text.

Grading

Story 1

Hour exams (2 @ 100 pts)	200
Quizzes (~10 @ 10 pts)	100
Final exam (200 pts)	200
Homework (scaled to)	200
Lab (scaled to)	200
Participation (about)	100
Total	**1000**

In 121: A~82%, B~71%, C~58%, D~47%

Lectures

- Lectures will include considerable class interaction
- The PowerPoint "lecture notes“ available on the web are not the whole story.

http://www.physics.umd.edu/courses/Phys122/Redish/lecnotes.htm

- We will use clickers extensively. Be sure to bring yours to lecture.
- There will be ~5 Interactive Lecture Demonstrations (ILDs) (5 partic. pts. each)
- Graded 10 minute quizzes in lecture most Mondays.

Lecture Homework

- Posted on the web Friday, due in lecture the next Friday. Solutions posted Friday afternoon.
- Homework is the critical outside-of-class activity! (expect to spend 4-6 hours/week)
- Work together – but don't copy!
- Work in groups and get help in the Course Center (0208 – Mon-Thur 11-6) or Slawsky Clinic (1210 – Mon-Fri 10-3)
- One problem handed in on paper and graded carefully (0-5 pts). Rest graded quickly on MP (0-2 pts)
- Check solutions! Grading (esp. on 2-pt questions) is sketchy (and no feedback is given)!

On the homepage!

The homework rules

- One problem will be identified as worth 5 pts. This will be written up "nicely" – typed and printed strongly preferred. It will be graded by your TA.*
- The other four lecture problems will be worth 0-1-2 points and will done on MP. Each problem will be graded by a single TA.
- The tutorial HW will be graded by your TA.**

* Hand in before lecture Friday in right bin. (No staples or clips, name on each page.)

** Hand in at start of tutorial.

Tutorials

- Discussion sections are run as group-learning sessions with worksheets.
- They will help to build difficult concepts and clarify confusing topics.
- Tutorial HW a quick review of Tutorial ideas. (expect to spend ~1/2 hour)
  - Graded 0-1 on 5 elements.

Labs

- Labs are required!
  Try very hard not to miss any.
  It is difficult to make up missed labs.
- Labs will be non-traditional
  and run for two weeks (4 hours)
- You will work in groups of 4
  and create one lab report per group
- You will design, carry out, analyze, and present your results to the class.
- You will use *Excel* to analyze your data.

Theme of the Laboratory: Understanding Measurement

- Although we will be using physics concepts learned in lecture, reading, and tutorial in our labs, demonstrating their reality will NOT be the point of the lab.
- The goal of the laboratory is to have you learn to think about measurement and data.
  - How do you create an experiment to answer a question?
  - How reliable is your result?
  - Why should someone believe your result?
  - When are two results "close enough" that we can say they agree?
  - When two results differ, how can we decide what is the correct answer?
- This models "real science" in the small –You may be doing your experiments before you learn the answers!

Exams

- Two midsemester exams and one final.
- Midsemester exams
  - Given on Friday
  - Returned on Monday and gone over in class
- Written regrade requests encouraged
- Makeup exams the following Thursday (out of class) for anyone who wants, but…
- You will be expected to think (not just recall) on exams!

Story 2

On exams: A ≥ 75%, B ≥ 60%, C ≥ 45%, D ≥ 30%
Class average ~ 60-65%. NOT CURVED.

What makes this class different?

- We focus on
  - valuable general skills
  - using science to make sense
  - conceptual understanding
  - problem solving (complex)
- We de-emphasize
  - memorization
  - rote learning
  - problem solving (trivial exercises)