Physics 207, Sections: 301/601 – 314/614
General Physics I
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Lecture 1

Agenda for Today
- Course Introduction
  - Scope of the course
  - Structure of the course
  - What you have to do
  - Pre-course assessment (for discussion sections)

Assignment: Read Ch. 1 and begin Chapter 2 (2.1 and 2.2)
- Measurement and Units, Velocity and Speed
- WebAssign Sample Problem Set

Announcements

- **Homeworks posted on WebAssign**
  - First semester is a FREE trial (Next semester will be $25 if used)
  - Go to www.webassign.net and log in
    - » username: UW NetID username
    - » institution: wisc
    - » password: last four digits of you UW ID # (or ask for e-mail)
- Homework assignments are posted on Physics 207 Server at http://romano.physics.wisc.edu/winokur/phys207/index.html
  Homework will be due by Noon on the stated day, usually **Tuesday**
  1. **One problem (blue and underlined) written up neatly and handed in (for content only).**
  2. **Honors students assigned an additional problem (italicized red).**
- Homework is graded automatically.
  You can have up to 10 attempts per problem.
- **Labs**
  - Begin on Monday of next week

Announcements cont'd

- Lectures (when in PowerPoint) will be available on the web.
- **Honors students** one Friday seminar per week (except exam weeks) and eight extra assigned problems (to behanded in)
- **Consultation Room** at 2131 Chamberlain (shared with Physics 201)

Course Info

- **Course has several components:**
  - **Lecture:** (traditional lecture, demos and **Active** learning)
  - **Reading Assignments**: From text, Serway and Jewett.
  - **Homework Sets**: Some "context rich" problems (50 pts)
  - **Exams:** Three evening midterms (300 pts) and a final (150 pts)
    - » Questions on tests will look like those done in the rest of the class (homework, discussion and lectures)
  - **Discussion section:** (50 pts)
    - Review homework
    - Group exercises
    - Occasional quizzes
  - **Labs:** (group exploration of physical phenomena, 50 pts)
    - Complete lab notebook (no formal write ups) and quizzes
    - May miss up to one lab (with valid excuse)

Lecture Organization

- **Four main components:**
  - Discussion class material
    - » Selected topics from text
  - Demostrations/experiments of physical phenomenom
    - » Physics is an experimental science
  - Interactive exercise with conceptual "Active Learning" problems
    - » Up to three per lecture
    - » Critical thinking and problem solving (Little memorization required)
  - Interactive Applications
    - » To illustrate **concepts**


Scope of Physics 207

- **Classical Mechanics:**
  - **Mechanics:** How and why things work.
    Motion (dynamics), balance (statics), energy, vibrations
    Classical:
    - » Not too fast ($v << c$), $c \equiv$ speed of light
    - » Not too small ($d >>$ atom), atoms $\cong 10^{-9}$ m
- Most everyday situations can be described in these terms.
  - Path of baseball
  - Vibrations of an elastic string
  - A roll of the dice (thermodynamics)

Today and Monday's Topics:

- Precourse assessment (handed out in discussion)
- Measurement and Units (Chapter 1)
  - ❖ Fundamental units
  - ❖ Systems of units
  - ❖ Converting between systems of units
  - ❖ Dimensional Analysis
  - ❖ Significant digits
- Velocity and Speed (first two sections of Chapter 2)

See text 1.1

Standard Quantities

- Basic elements of substances and motion.
- All things in classical mechanics can be expressed in terms of the fundamental quantities:
  - ❖ Length L
  - ❖ Mass M
  - ❖ Time T
- Some examples of more complicated quantities:
  - ❖ Speed has the quantity of L / T (i.e. miles per hour).
  - ❖ Acceleration has the quantity of L/T^2 (Chapter 2)
  - ❖ Force has the quantity of ML / T^2 (Chapter 5).

Units

- **SI (Système International) Units:**
  - ❖ mks: L = meters (m), M = kilograms (kg), T = seconds (s)
- **British Units:**
  - ❖ L = inches, feet, miles, M = slugs (pounds), T = seconds
- We will use mostly SI units, but you may run across some problems using British units. You should know how to convert back & forth.
- Why do units matter?

Recap of today's lecture

- Measurement and units (chapter 1)
  - ❖ Systems of units (Text: 1.1)
  - ❖ Density (Text: 1.3)
  - ❖ Converting between systems of units (Text: 1.5)
  - ❖ Dimensional Analysis (Text: 1.4)
- Reading for Monday's class 9/11/06:
  - » Chapter 1, Chapter 2 (through section 2.2)
  - » WebAssign
- Reading for Wednesday's class 9/13/05:
  - » All of Chapter 2