"You do not really understand something unless you can explain it to your grandmother."

--Albert Einstein
Introduction

- Welcome to Physics 10!

- Physics 10 is a one quarter course for non-science majors designed to emphasize concepts with minimal mathematical formulation.

- It is traditionally taught with 3 one hour lectures per week with an associated one hour discussion section per week.
Introduction

- Who is this guy?
- I am Dr. Michael Anderson.
- I am a faculty lecturer in the Physics department (LPSOE).
- My degree is in nuclear physics from UC Davis.
- I have taught Physics for over 7 years at various places.
- I was a satellite engineer for Lockheed-Martin for 4 years.
- This is my fourth year at UCSD.
Introduction

My office is located in the 2611 Mayer Hall Addition.

There is no TA for this course is.

This means that I will be conducting the Discussion Sections.
Administrativa

- The website will be an extremely useful place. There you have:
  - An academic calendar
  - The class syllabus
  - The homework assignments
  - Current announcements
  - Office hours and Discussion Sessions
  - Lecture PDFs

http://physics.ucsd.edu/students/courses/winter2010/physics10
The book we will be using is:

Hewitt, Conceptual Physics, 10th Edition, Pearson/Addison Wesley

The list of homework problems for the quarter is on the website.

They are divided into: Review Questions, Exercises, and Problems.

Solutions for Exercises and Problems will be posted on the website before the quiz.
Administrativa

There is a lot of help available for you to complete your homework and understand the concepts:

- Discussion Sessions:
  - Wednesdays, 5pm – 6pm   2622 York
  - First one: next Wednesday, 1/13

- Physics Dept. Tutorial Center runs from Sunday-Thursday from 3:00pm–8:00pm 2702 Mayer Hall Addition.

- There are also office hours.
Lectures

"The lecture method is the process whereby the lecture notes of the instructor get transferred to the notebooks of the students without passing through the brains of either!"

--Darrell Huff

That quote pretty much sums up my feelings about modern lectures.

That is why I strongly encourage your participation in the lecture process.

This is why I have turned to using clickers (InterWrite PRS).
Clickers

- To use the clicker:
  - First, put your student ID (before your first use).
  - Select your answer. You must choose one of the offered choices or you will receive no credit.
  - The receiver will tell you if your answer is received by the system.
  - You will receive 2 points for merely answering and an additional point for answering correctly (each question is out of three points).
  - We will start using the clickers on next Monday.
Exams

"Equations are the devil’s sentences!"
--Stephen Colbert

- Concepts will be emphasized and math will not be emphasized (but will still be present).

- There are 4 quizzes:
  F 1/22   F 2/5   F 2/19   F 3/5

- The quizzes will be based on lectures, clicker questions, text, and homework.

- Your lowest quiz score will be dropped.

- The cumulative final exam will be Friday, Mar. 19th from 11:30am-2:30pm.
Video Project

"Science is not something you have to go to a laboratory to do. Life is a lab."
--Walter E. Massey

- This quote is the idea behind the video project.

- You will break up into groups of 3 or 4 to teach a Physics concept with a 4 to 9 minute video.

- Group proposals are due by Feb. 5th.

- The projects are due by March 5th.

- The Video Project Policy on the website has all of the details.
Grades

Your grade will be calculated by:

35% Quizzes

35% Final

25% Video Project

5% Clickers.
Grades

Your grade will be determined by using the following tentative scale:

- Between 85% and 100% => A
- Between 70% and 85% => B
- Between 55% and 70% => C
- Between 40% and 55% => D
- Grade below 40% => F
What is science?

Question: At what temperature is water at its greatest density?
Answer: 4°C.

Question: How long does it take light from the Sun to reach Earth?
Answer: It takes slightly over 8 minutes (8.3 minutes).

Question: What is the half-life of Uranium–238?
Answer: 4.46 billion years.
What is science?

- Are memorizing facts and figures, the basis of science?

- The answers to the previous questions are merely terminology and facts.

- Terminology and facts are necessary to science but not the key.
What is science?

- The scientific method is designed to break down knowledge and data so that it can be studied and reproduced.

- 1) Make an educated guess (or hypothesis) to solve an existing problem.
- 2) Predict consequences that can be observed to test if the hypothesis is right.
- 3) Perform experiments or tests to find observations.
- 4) Retest many times until a general rule has been found regarding your hypothesis.
What is science?

Specifically in this class, we will be using the scientific method in conjunction with work outside of lecture.

I will present ideas and concepts in lecture.

You will test the validity of those concepts outside of lecture.

If you ever truly doubt the validity of any concept I present, then come up with a test to disprove it.
Physics: Friend or Foe?

- How would you describe what Physics is to your grandmother?

- What immediately comes to mind when you hear the word “Physics?”
For Next Time (FNT)

- Download and read syllabus.
- Read Chapter 1 and 2.
- Start on the homework for Chapter 1.
- When is the first quiz?
- In two and a half weeks (Friday, 1/22)