Welcome to Phys 130!

http://www.sos.siena.edu/physics/Current_Courses/PHYS130/

Blackboard
blackboard.siena.edu

Physics

- Physics strives to describe the physical world in terms of the natural laws that govern motion, forces, electricity, etc.

- The laws are derived from observations and experiment.

- Once you understand the underlying laws, you can apply them to new situations
  - focus on understanding rather than memorization

- The laws themselves are often very simple. Applying them can be tricky...
Scientific Method

- Observations & Experiments
- Model
- Theory
  - must make predictions
  - must be testable
- Testing, testing, testing
- Simple is better (Occam’s razor)

The Scientific Method

- It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong.

- Richard Feynman
Physics Education Research

- Physics educators have been working for a decade to improve student learning.

- They have identified concepts that students find most difficult.
  - allows us to focus our time on what is most challenging for you

- They have identified active learning strategies that improve student understanding.

Course Design & Grading

- **Tests** 30%
  - Uniform exams for all sections of General Physics
  - Exam 1, Tues 10/14  15%
  - Exam 2, Thurs 11/20  15%

- **Laboratory** 20%
  - You must pass lab to pass class!
  - You must complete every lab to pass lab!

- **Other** 30%
  - Volume C  15%
  - Volume N  15%
  - Daily Homework
  - Weekly Homework
  - In-class assignments

- **Final Exam** 20%
  - cumulative
Text book

- Six Ideas That Shaped Physics
  by Thomas A. Moore
  - Unit C: Conservation Laws Constrain Interactions
  - Unit N: The Laws of Physics are Universal

About the textbook

- Your textbook is your #1 resource!!!
- You are expected to come to class having read the assigned chapter(s).
- Daily and weekly homework problems will be assigned.
Attendance Policy

- Students are expected to attend all classes and are responsible for all material covered in class, even when absent.

- Students should understand that some material discussed in class is not covered in the textbook.

- In-class quizzes, problems, and activities can not be made up.

Daily Homework Problems

- Covers new material
- Daily homework is listed on the schedule
- Homework is due at the beginning of class
- No late homework will be accepted
- Homework grading is effort based
- Do homework in pencil
- Returned to you by the next class
Grading Homework

- Daily homework will be graded on a 5-point scale using the following general guidelines:
  - 5: good effort with correct results and reasoning
  - 4: a good effort with minor errors or a fair effort with no conceptual or math errors
  - 3: a good effort with modest conceptual errors and/or math errors or a fair effort with minor errors
  - 2: a fair effort involving modest conceptual errors or a good effort involving serious conceptual errors
  - 1: a very poor effort
  - 0: no initial effort

Homework Corrections

- Correct mistakes to homework based on posted solutions
- Correct mistakes in a different color (blue, green, etc. NOT RED) on previously turned in homework
- DO NOT rewrite solutions – they will not be accepted
- Due one week from original due date
- Maximum correction points you will receive is 2
Weekly Homework Problems

- Reviews material covered the previous week
- Due at the beginning of class on Tuesday
- Solution must be coherent and clear as well as correct
- Solutions will be posted after the due date and will be available for 1 week
- No corrections

Weekly Homework Grading

- Graded on 8 point scale with the extra three points devoted to quality of presentation issues
  - Adequate diagrams
  - Explanations of model
  - Units and vector notation
  - Algebra first (with symbols only), plug in numbers at the end
- Grading rubric - same as daily HW plus 3 extra pts
  - 3: great presentation
  - 2: minor presentation problems
  - 1: major presentation problems
  - 0: extremely poor presentation
Guidelines for working homework problems

- Given:
- Find:
- • Draw a picture!
- • Write in pencil
- • Clearly label units
- • Cancel units when appropriate
- • WRITE NEATLY
- • Keep work in one column
- • Box answers

Class Time

- 5 Minutes at the start of class
  - Professor will select two 2 minute problems from end of chapter
  - Write quiz question # and answers on top of daily HW
- Group problems
- Lab-style activities
- SHORT lectures
- Classes will be ACTIVE! They will require you to participate and engage in the problems and activities.
Preparing for Class

- Assigned Reading
  - One or two chapters each class
  - Usually one chapter
  - Sometimes two chapters will be assigned
- Go through exercises in each chapter
  - Answers are provided at the end of the chapter
  - Attempt two minute problems while reading
- Daily Homework

Logging into computers

- Username
- password

- Example
  - mmccolgan
  - P901...
Notes

- Powerpoint slides will be posted on the web.
  [Link to slides]
- Blackboard
- You need paper for working out in-class problems as well as additional material not covered in slides.
- Calculator!!!
- Binder is a good option.

Schedule and Syllabus
Daily Homework

- For Thursday, 9/10
  - read Chapter C1 and C2
  - Daily Homework (DH) C1B.2, C1B.6, C2B.2, C2B.5

<table>
<thead>
<tr>
<th>Week</th>
<th>HW</th>
<th>Tuesday</th>
<th>Thursday</th>
<th>Pre-Lab Homework</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/8</td>
<td>Read Ch 1, 2</td>
<td>Course Introduction Assessment</td>
<td>C1 Interaction, C1B.2, C1B.6</td>
<td></td>
<td>No Lab this week</td>
</tr>
</tbody>
</table>

- DH C1B.2, C1B.6
- C2 Vector
- DH C2B.2, C2B.5
Daily & Weekly Homework

- For Tuesday, 9/15
  - read Chapter C3

- Weekly Homework (WH) C1S.4, C2B.7, C2S.1
- Daily Homework (DH) C3B.1, C3B.4

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<td>Read Ch 1, 2</td>
<td>Course Introduction Assessment</td>
<td>C1 Interaction DH C1R.2, C1R.6 C2 Vectors DH C2B.2, C2B.5</td>
<td>No Lab this week</td>
<td></td>
</tr>
<tr>
<td>9/15</td>
<td>Read Ch 3</td>
<td>C3 Momentum WH C1S.4, C2B.7, C2S.1 DH C3B.1, C3B.4</td>
<td>C4 Particles and Systems slides DH C4B.1, C4B.5 Reading C4</td>
<td>Watch Pre-lab video (before Lab 1) Lab 1: Lab: Measurement and Graphing Lab (Include Buggy Lab)</td>
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Homework Solutions

- Download ProbViewer
  - [http://www.physics.pomona.edu/sixideas/sicpr.html](http://www.physics.pomona.edu/sixideas/sicpr.html)
  - Scroll down to ProbViewer 1.4
  - Program is available for Mac and PC
  - Available on the day that homework is handed in – no late homework