IMPERIAL VALLEY COLLEGE
PHYSICS 202 – GENERAL PHYSICS II

Course Syllabus – Fall 2009

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Office Hours: Mondays and Wednesdays 10:00 AM to 11:00 AM and 2:30 PM to 3:00 PM, Tuesdays and Thursdays 11:00 AM to 12:00 PM.
Code: CRN 11237

Class Meetings:
Lecture: Tuesday and Thursday 9:00 AM to 10:50 AM, Room 201.
Lab: Monday and Wednesday 8:30 AM to 9:55 AM, Room 410.

Author: Halliday, Resnick, and Walker.

Prerequisite: PHYS 200 with a grade of "C" or better and MATH 194 with a grade of "C" or better or concurrent enrollment in MATH 194.

Course Philosophy: This course is designed to give an understanding of the fundamental principles of physics in the areas of electricity, magnetism, atomic, and nuclear physics.

Student Learning Outcomes (SLOs)

1. The student will solve problems involving electric charges, electric field lines and the motion of a charged particle in a uniform electric field.
2. The student will solve problems involving Gauss' Law.
3. The student will solve problems involving electrical potential, potential energy due to point charges and continuous charge distributions.
4. The student will solve problems involving capacitors.
5. The student will solve problems involving current, resistance, electrical energy and power.
6. The student will solve problems involving EMF, resistor combinations, Kirchoff's Law, and RC circuits.
7. The student will solve problems involving magnetic fields in and near conductors, and the motion of charged particles in a magnetic field.
8. The student will solve problems involving the magnetic field of various sources.
9. Student will solve problems involving Faraday's and Lenz's Laws, and induced EMFs.
10. The student will solve problems involving inductance for RL, LC, and RLC circuits.
11. The student will solve problems involving resistors, inductors, and capacitors in an AC circuit.
12. The student will solve problems involving electromagnetic waves.
13. The student will solve problems involving molecular bonds, the energy spectra of molecules, and semiconductors.
14. The student will solve problems involving nuclear binding energy, radioactivity, and the decay process.
15. The student will solve problems involving collisions between nuclear particles, fission, fusion, and elementary particles.

Grading Criteria
Course must be taken on a “letter-grade” (LG) basis only.

Grading Policy
The student’s grade will depend on the following areas:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework (12)</td>
<td>120 points</td>
</tr>
<tr>
<td>Tests (1-2-3-4)</td>
<td>200 points</td>
</tr>
<tr>
<td>Labs Reports</td>
<td>200 points</td>
</tr>
<tr>
<td>Reading Questions (12)</td>
<td>120 points</td>
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<tr>
<td>Other/Special Assignments*</td>
<td>160 points</td>
</tr>
<tr>
<td>Mid-term</td>
<td>100 points</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100 points</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1000 points</strong></td>
</tr>
</tbody>
</table>

*It may include quizzes, special projects, presentations, review questions, etc.

All grades are calculated by using the standard scale of:

A = 100-90%
B = 89-80%
C = 79-70%
D = 69-60%
F = 59% and below

Class Rules and Expectations
1. Failure is not a good choice, so apply yourself, study, do not give up on the first try, attend class regularly, ask for help when needed, and always do your best!
2. The student is expected to attend class meetings regularly. After the third absence, if the student does not drop the class via Webstar, he/she will receive an “F” as final grade; so it is the student’s responsibility to drop before the deadline.
3. What constitutes an absence? Not showing up to class during a regular class meeting, or arriving more than 20 minutes after the beginning of the class, or leaving more than 20 before the end of the class.
   a. Example: Class starts at 10:00 AM and ends at 12:00 PM. If you arrive after 10:20 AM you are absent. If you leave before 11:40 AM you are marked absent. If you leave the room for more than 20 minutes for whatever reason, you are absent.
4. What constitutes a tardy? Arriving within the first 20 minutes after the beginning of the class or leaving within the last 20 minutes before the end of the class (3T = 1A).
   a. Example: Class starts at 10:00 AM and ends at 12:00 PM. If you arrive between 10:01 AM and 10:20 AM you are marked tardy. If you leave between 11:41 AM and 12:00 PM you are marked tardy as well as if you “disappear” from the room for no more than 20 minutes (i.e. having lunch). If you need to use the restroom, you are expected to return within a reasonable time period.
5. If a student reaches the fourth absence after the deadline, his/her grade will be reduced one letter grade for each subsequent absence.
a. Example: your current grade is a “B.” On the 4th absence you will get a final grade of “C,” on the 5th one, your grade is “D,” and on the 6th one and beyond, your final grade is “F.” Exceptions include, for example, hospitalization for several days and with appropriate documentation.

6. Deadline to drop the class with a “W” is Friday, November 13, 2009. Late drops on graded classes will require that the student receive an F.

7. Class materials such as a notebook or binder with lined or quad ruled paper, pen, pencil, scientific calculator, and the textbook will be brought to every class meeting.

8. It is up most important that students review the material to do well on exams.

9. Students are encouraged to form study groups to meet regularly to keep up with assignments and to study for tests/mid-term/final exam.

10. Late assignments will not be accepted. It is student’s responsibility to turn assignments in when they are due regardless he/she is absent (no excuses!).

11. Students will not be allowed to make up a test or exam or final exam.

12. The work is individual which means that you are responsible for what you turn in regardless whether you were part of a team or group. It is understandable that you may need to share data with partners but you are expected to write up your own assignments. Identical assignments will not be accepted; failure to comply will result in a “zero” for that specific assignment.

13. No photocopied textbooks are allowed. No audible pagers or cell phones allowed. You will be dropped on your second offense for disturbing the class in this manner.

14. No food or drinks are allowed in the classroom.

15. No children are allowed in the classroom.

16. Absences attributed to the representation of the college at officially approved conferences and contests and attendance upon field trips will not be counted as absences (this includes sports). However, the student is responsible for notifying the instructor and for the work done in class. If your absence coincides with an exam, it is student’s responsibility to contact the instructor via email or by phone before the following class meeting to make it up. Failure to do so will result in a “zero” for that particular exam.

17. Discipline: you need to understand that this is a college class, the “good high school days are gone.” Appropriate behavior is expected at all times (i.e. not speaking out of turn, raise your hand to talk and wait until acknowledged, paying attention, avoid side comments, not answering your cell phone in class, working in assignments for another class, etc.). For this reason, no discipline problem will be tolerated.
   a. First offense: warning.
   b. Second offense: student will immediately be dropped from the class.

18. Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP & S) office as soon as possible. DSP&S, Room 2117, Health Sciences Building, (760) 355-6312.

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**Calendar** (It may be subject to modification according to students’ needs)

<table>
<thead>
<tr>
<th>WEEK</th>
<th>CORE CONTENT</th>
<th>READING DUE</th>
<th>ASSIGNMENT DUE</th>
</tr>
</thead>
</table>
| 1    | Syllabus / Introduction  
  Chapter 21 | Chapter 21     |                        |
| 2    | Chapter 22          | Chapter 22     |                        |
| 3    | Chapter 23          | Chapter 23     |                        |
| 4    | Chapter 24          | Chapters 21-22-23  
  Chapter 24 | Test # 1  
  (Chapters 21-22-23) |
<p>| 5    | Chapter 25          | Chapter 25     |                        |</p>
<table>
<thead>
<tr>
<th></th>
<th>Chapter</th>
<th>Review Chapters</th>
<th>Test #</th>
<th>Mid-term</th>
<th>Test #</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>Chapters 24-25</td>
<td>Chapters 25</td>
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<tr>
<td>7</td>
<td>Review Chapters 21-25</td>
<td>Chapters 21-25</td>
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<tr>
<td>8</td>
<td>Chapter 26</td>
<td>Chapter 26</td>
<td></td>
<td></td>
<td>Mid-term</td>
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<tr>
<td>9</td>
<td>Chapter 27</td>
<td>Chapter 27</td>
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<td></td>
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<tr>
<td>10</td>
<td>Review Chapters 26-27</td>
<td>Chapters 26-27</td>
<td></td>
<td>Test # 3</td>
<td>Test # 4</td>
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<tr>
<td>11</td>
<td>Chapter 28</td>
<td>Chapter 28</td>
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<tr>
<td>12</td>
<td>Chapter 29</td>
<td>Chapter 29</td>
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<td>13</td>
<td>Chapter 30</td>
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<tr>
<td>14</td>
<td>Chapter 31</td>
<td>Chapter 31</td>
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<td>Test # 4</td>
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<td>15</td>
<td>Chapter 32</td>
<td>Chapter 32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Review Chapters 26-32</td>
<td>Chapters 26-32</td>
<td></td>
<td>Final Exam</td>
<td></td>
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</tbody>
</table>

* It may be subject to modification.

**Homework:** The purpose of homework is to provide the student with sufficient practice to master all topics studied in class and to do well on tests. Each homework assignment is due no later than a week after we complete each chapter. For example, if we finish chapter # 1 on February 20th, homework # 1 is due by February 27th. From each chapter you are required to answer any 10 problems not previously solved in class.

When turning in homework assignments please include the following information: Your Name, Class Code, Homework #, Page #, and Problem #. Failure to do so may result in inaccurate grade recording.

**Lab Reports:** These reports must be typed, double-space, font Times New Roman or similar, size 12, and the graphs must be done with Excel or any graphing program (i.e. TI InterActive). You may also use the rubric as a guideline.

**Point Distribution (maximum number of points per category)**
- Objective or goal: 1 point
- Summary or background information: 3 points

The following is an example of a summary written by a student (keep in mind that the setup was different from the one we will use in Physics 200).

“The second law of Newton allows for the calculation of acceleration, given that mass and the acting forces are known. If a body is allowed to move freely along a level surface, and the forces of friction neutralized, then the acceleration of the body and its net force can also be found. In this situation, a laboratory cart with one end attached to a recording timer, and the other end to a string is released from rest. The string has one mass attached to compensate for the effects of friction. Another mass of exactly 1 kg is attached to provide for acceleration by means of a pulley and the effect of gravity. The acceleration of gravity will therefore have an accelerating force of 9.8N (f=ma), which in turn, will pull the laboratory cart across the level surface. By examining the number of dots per time interval on the timer tape, along with the total displacement, the acceleration of the cart can be found; the average acceleration was determined to be 9.12 m/s/s. By multiplying
the acceleration by mass, the force (f=ma) can also be found, which was 10.06N, or about 2.7% higher than the known value of the gravitational force of 9.8N. Experimental errors could have been caused due to the amount of mass needed to equalize the frictional force. I will suggest performing the experiment three times and determining the average.”

- Data Table (s): 3 points
- Sample calculations: 2 points
- Answers to all questions: 4 points
- Graphs: 3 points
- Conclusion: 4 points

You are required to answer all the questions using complete sentences. For example: Yes, No, Linear relationship are not accepted answers unless you justify why. Also include data tables (you may modify them if you feel it appropriate), one set of sample calculations (show how you came out with all the values entered in your table), objective (the goal of the experiment is to determine the acceleration due to gravity), a summary of the experiment (see above) and a final conclusion (about 1/2 page long) in which you will discuss the results citing specific evidence, discuss the validity of the experiment including experimental error, and suggest methods of improvement.

Reports are due a week after the specific experiment has been performed (If the experiment was done on September 03, it is due on September 10). You will be allowed to make one set of corrections after the first draft has been turn in and within a week. A grade will be assigned accordingly.

**Reading Questions**: They are available in the webpage in PowerPoint format. You will read the questions and you will answer them as you read the textbook. Since they are multiple-choice, you will pick the best answer to each statement according to your interpretation along with a brief justification (i.e. page 27, line 3). Correct answers are provided to check your understanding. If your answers do not agree, go back and see if you are able to figure out why that given answer is the right one instead of the one you have chosen. They are due the first Thursday of the week we start each chapter (for example, if we start chapter 2 on Monday September 14, your questions are due on Thursday September 17).

**Tests or Exams**: They may be only multiple choice or multiple choice and free response questions. No makeup exams!

**Mid-term and Final Exam**: They may include questions from the tests (recycled questions) and new questions (you have not seen them before but with similar difficulty to the other questions). No makeup exams!

**Other Assignments**: It may include review questions, quizzes, special projects, etc. and they will be announced in advance.