Course Syllabus – Spring 2009

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Office: 1604F
Office Hours: Mondays and Wednesdays 10:15 AM to 12:00 PM, Tuesdays and Thursdays 11:00 AM to 11:45 AM.
Code: CRN 21165

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: Physics 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 area of mechanics.

Measurable Course Objectives and Minimum Standards for Grade of “C”

1. The student will solve problems involving interference, reflection, and transmission of transverse waves.
2. The student will solve problems involving velocity, frequency, energy, intensity, and the Doppler effect of sound waves.
3. The student will solve problems involving resonance, super-position and interference of standing waves in air, strings, rods and plates.
4. The student will solve problems involving temperature, thermometric properties, and temperature scales.
5. The student will solve problems involving thermal energy, heat capacity, latent heat, heat transfer, and the first law of thermodynamics.
6. The student will solve problems involving the kinetic theory of gases and the concepts of ideal gases.
7. The student will solve problems involving heat engines, refrigeration, entropy, and the second law of thermodynamics.
8. The student will solve problems involving Huygens’ Principle, reflection, and refraction.
9. The student will solve problems involving images formed by plane mirrors, spherical mirrors, and thin lenses.
10. The student will solve problems involving interference of light waves, Young’s Double Slit Experiment, and interference in thin films.
11. The student will solve problems involving single slit diffraction, resolution, diffraction gratings, and polarization.
12. The student will solve problems involving Einstein’s Theory of special relativity.
13. The student will solve problems involving the hypothesis of Planck, Einstein’s photoelectric effect, atomic spectra, and the Bohr Theory of the atom.
14. The student will solve problems involving the wave properties of particles, the uncertainty principle, and the Schrödinger wave equation.
15. The student will solve problems involving the hydrogen atom, quantum numbers, electron spin, and the exclusion principle.

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>10 points each = 120 points</td>
</tr>
<tr>
<td>Tests (1-2-3-4)</td>
<td>50 points each = 200 points</td>
</tr>
<tr>
<td>Labs (5 Reports)*</td>
<td>100 points</td>
</tr>
<tr>
<td>Other Labs**</td>
<td>80 points</td>
</tr>
<tr>
<td>Mid-term</td>
<td>100 points</td>
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<tr>
<td>Final Exam</td>
<td>100 points</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>700 points</strong></td>
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</tbody>
</table>

* Use rubric to write reports.
** No reports are required; answer the questions for each lab.

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, 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 you if “disappear” from the room for about 20 minutes. 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, he/she will receive a semester grade of “F” (no exceptions!).

6. Deadline to drop the class with a “W” is May 15, 2009. Late drops on graded classes will require that the student receive an F.

7. Class materials such as a notebook, 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. Late assignments will not be accepted. It is student’s responsibility to turn assignments in when due regardless he/she is absent (no excuses).

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

11. 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.

12. 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 any manner.

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

14. No children are allowed in the classroom.

15. 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 the work done in class. If your absence coincides with an exam, it is student’s responsibility to contact the instructor via e-mail 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.

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

17. 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.

**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>
<tbody>
<tr>
<td>1</td>
<td>Syllabus / Introduction Waves-I</td>
<td>Chapter 16</td>
<td>Test # 1 (Chapters 16 &amp; 17)</td>
</tr>
<tr>
<td>2</td>
<td>Waves-I</td>
<td>Chapter 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waves-II</td>
<td>Chapter 17</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Waves-II</td>
<td>Chapter 17</td>
<td></td>
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<tr>
<td>4</td>
<td>Electromagnetic Waves</td>
<td>Chapter 33</td>
<td></td>
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<tr>
<td>5</td>
<td>Images</td>
<td>Chapter 34</td>
<td></td>
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<tr>
<td>6</td>
<td>Images</td>
<td>Chapter 34</td>
<td></td>
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<tr>
<td>7</td>
<td>Interference</td>
<td>Chapter 35</td>
<td></td>
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</table>
8 | Diffraction | Chapter 36 | Test # 2 (Chapters 33-34-35)
9 | Diffraction | Chapter 36 |
10 | Temperature, Heat, and the First Law of Thermodynamics | Chapter 18 | Mid-term (Chapters 16-17-33-34-35-36)
11 | The Kinetic Theory of Gases | Chapter 19 |
12 | Entropy and the Second Law of Thermodynamics | Chapter 20 |
13 | Relativity | Chapter 37 | Test # 3 (Chapters 18-19-20)
14 | Photons and Matter Waves | Chapter 38 |
15 | More about Matter Waves Review for Final Exam | Chapter 39 |
16 | | | Final Exam (Chapters 18-19-20-37-38-39)

* It may be subject to modification.

**Homework:** The purpose of homework is to provide the student with sufficient practice to master all topics to do well on tests. Each homework assignment is due no later than a week after we complete the chapter. For example, if we finish chapter 16 on February 20th, homework is due by February 27th.

<table>
<thead>
<tr>
<th>HOMEWORK</th>
<th>CHAPTER</th>
<th>PAGES</th>
<th>PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td># 1</td>
<td>16</td>
<td>438-444</td>
<td>Any 20</td>
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<tr>
<td># 2</td>
<td>17</td>
<td>467-475</td>
<td>Any 20</td>
</tr>
<tr>
<td># 3</td>
<td>33</td>
<td>915-923</td>
<td>Any 20</td>
</tr>
<tr>
<td># 4</td>
<td>34</td>
<td>949-957</td>
<td>Any 20</td>
</tr>
<tr>
<td># 5</td>
<td>35</td>
<td>981-989</td>
<td>Any 20</td>
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<tr>
<td># 6</td>
<td>36</td>
<td>1014-1021</td>
<td>Any 20</td>
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<tr>
<td># 7</td>
<td>18</td>
<td>500-506</td>
<td>Any 20</td>
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<tr>
<td># 8</td>
<td>19</td>
<td>531-535</td>
<td>Any 20</td>
</tr>
<tr>
<td># 9</td>
<td>20</td>
<td>555-560</td>
<td>Any 20</td>
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<td># 10</td>
<td>37</td>
<td>1050-1056</td>
<td>Any 20</td>
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<tr>
<td># 11</td>
<td>38</td>
<td>1078-1082</td>
<td>Any 20</td>
</tr>
<tr>
<td># 12</td>
<td>39</td>
<td>1108-1111</td>
<td>Any 20</td>
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</table>

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 an involuntary inaccurate grade recording.