PHYS 203, General Physics, Spring, 2005  MWF 9:00, 100 WIL + Tutorial W, H or F, 112 WIL
NOTE: You are responsible announcements in lecture. Also posted on Blackboard: https://blackboard.uoregon.edu/

**Instructor:** David R. Sokoloff, Professor of Physics, 160 Willamette Hall, Phone: 346-4755
Office Hours: M 10:30-11:30, W 11:30-12:30, H 9:30-10:30, F 12:30-1:30, e-mail: sokoloff@darkwing.uoregon.edu

**Objectives:**
1. To learn the basic laws of physics in the area of electricity and magnetism and modern physics.
2. To develop physical intuition and build correct conceptual models for phenomena.
3. To apply the conceptual models and basic laws along with basic mathematics to solve problems.

**Prerequisites:** PHYS 201 and 202

**Required Text:** Douglas Giancoli, *Physics, 6th edition*, (Prentice Hall, 2004) with online homework option. (The text bundled with the online homework booklet for no extra cost is available from the University of Oregon Bookstore. The online homework booklet can be obtained separately from http://vig.prenhall.com/catalog/academic/product/0,1144,0131419269,00.html)

**Grading:**
1. Tutorials and tutorial preparation (Begin April 6, attendance mandatory, see below.) 15%
2. Homework To Hand In (Turn in Mon. by 5:00 PM, see below. Lowest dropped) 16%
3. Midterm Exams (See schedule and makeup policy below.) 34%
4. Final Exam (Cumulative.) 29%
5. Interactive Lecture Demonstrations (Attendance Mandatory, see below.) 6%

**TOTAL POINTS**
100%

**Interactive Lecture Demonstrations (ILDs):** A mastery of physics means having a conceptual understanding of physical phenomena as well as being able to solve physics problems. ILDs will be used to develop your conceptual understanding. They will be announced one lecture in advance. Attendance and active participation are required; they are worth one point each. (To accommodate unforeseen circumstances beyond your control, you will actually be allowed to miss one of these ILDs. Makeup will not be possible. Save your one miss for a truly unavoidable absence.) Exams will include conceptual questions based on the ILDs.

**Tutorials:** Problem solving will be the focus of the Tutorials. There you will work collaboratively with your classmates to develop and practice your problem solving skills. You are required to attend Tutorial each week. 10% of your grade for Tutorials will be assigned for attendance as follows: miss none or one=10%, miss two=8%, miss three=6%, miss four=4%, miss five or more=0%. You must attend the Tutorial section in which you are registered unless you have permission (see below).

**Tutorial Prep. Assignment:** In order to make your time in Tutorial more effective, you are required to attempt solutions to the online problems listed as Tutorial Prep. each week, and submit answers before the time that your Tutorial meets. This will make up the remaining 5% of your Tutorial grade. A record of your attendance and the work done by your group will be turned in at each Tutorial.

**Homework:** 10 homework problems will be assigned each week. Your answers are submitted to the online homework website for grading: http://phlga.pearsoned.com/phlga2/classes/PHYS203. (The course code is PHYS203.) The latest that homework can be submitted is 5:00 PM on Monday. Two attempts will be permitted for each assignment. After you submit your answers the first time, you will receive feedback showing any problems that were incorrect. Your lowest homework grade will be dropped. Late homework will not be accepted because homework solutions will be posted on Blackboard at 5:00 PM each Monday, at which time the next assignment will also be available.

In order to learn how to solve problems more reliably it is necessary to practice good problem-solving skills. Therefore we will require that the problem solutions you turn in on exams be well organized. You will be graded on good solutions, not just answers.

Toward that goal, exam problem solutions that you hand in should consist of the following components:

1. Diagram that clearly indicates the problem situation and the question(s) asked. (You may add notes to the diagram to clarify the problem statement.)
2. Problem solution that indicates clearly
   a) Fundamental principle(s) used to solve the problem.
   b) Numbered steps clearly indicating the logical progression of your reasoning.
   c) A clearly marked final answer on the right-hand side of the page. The answer should be underlined or boxed.
3. A statement that the answer you found was checked by you and whether the solution appears to be reasonable or not.

If your solutions do not contain these minimum components, you will lose points on the exam.

The midterm exams and final exam will include problems similar to those worked in homework and in Tutorial. They will also include conceptual questions based on the assigned homework questions and ILDs.

**Homework, Tutorial and Exam Makeup Policies:** Since your lowest homework grade will be dropped, you can miss just one homework for any reason, and there will be no makeup. Makeup exams will only be given when you have a documented excuse (doctor's note, traffic citation, jail bond, etc.). You may make up a Tutorial during the same week in another section with permission.
**Time Commitment and Management**

Best use can be made of the text and lectures by reading the text before coming to lecture each day. As a rule of thumb, university courses require 2-3 hours/week of work outside of class for each hour spent in class. Therefore, if you wish to succeed in General Physics, you should devote a minimum of 8-12 hours/week outside of class. There are certain keys to using your time efficiently:

- It is best to spend 1-2 hours each day on text readings and or homework problems (as opposed to longer periods of time on a weekend or right before an exam).
- Study in small groups and discuss difficult concepts with other members of the group.
- If you get completely stuck on a problem, write down notes to remind yourself of the questions you have, and see your lecture or tutorial instructor or go to the Drop-in Help Center [http://hendrix.uoregon.edu/~dlivelyb/TA_assign/](http://hendrix.uoregon.edu/~dlivelyb/TA_assign/) to get help.
- If you get significant help on a problem, immediately try another similar one (even if it is not assigned) to build your confidence.

Students who attend class regularly, devote adequate time outside of class, manage their time effectively and practice good problem-solving skills as outlined above, generally succeed in this course.

**Lab:** Those who are also registered in the laboratory, PHYS 206, will find that the laboratory exercises will also help you to understand the physical concepts. The laboratories have been based on the most recent research into how students best learn physics at this level, and often make use of microcomputers as aids to instruction. No previous knowledge of computers is necessary. Labs meet beginning April 11. Buy your RealTime Physics lab book before coming to the first lab. For more information, go to the PHYS 206 website: [http://hendrix2.uoregon.edu/~dlivelyb/uo_ipl/index.html](http://hendrix2.uoregon.edu/~dlivelyb/uo_ipl/index.html).

**COURSE SCHEDULE**

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<tr>
<th>Week</th>
<th>CHAPTER/LECTURE TOPICS</th>
<th>HOMEWORK DUE ONLINE BY 5:00 PM MONDAY. NOTE: Work online not text versions!</th>
<th>EXAMS</th>
<th>ONLINE TUT. PREP. ASSIGNMENT</th>
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<td>1</td>
<td>16/Electric charge and forces. Coulomb's law, electric field</td>
<td>16 Problems 6,8,14,23,26,32,44, 47,61, 66</td>
<td>No Tutorial This Week</td>
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<td>2</td>
<td>17 to 17-6/Electric potential, electric energy</td>
<td>17 Problems 2,6,10,14,15,20,31, 32,36,38</td>
<td>Tut. Prep. 2</td>
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<td>3</td>
<td>17-7 to end/Capacitance, storage of electric energy 18 to 18-4/Electric current, batteries, Ohm's law</td>
<td>17 Problems 48,52 18 Problems 1,5,6,14,17,28,34,38</td>
<td>Tut. Prep. 3</td>
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<td>4</td>
<td>18-5 to end/Electric power, alternating current 19 to 19-5/DC circuits, series and parallel connection of resistors, Kirchhoff's rules, internal resistance</td>
<td>18 Problems 43,45,50 19 Problems 2,6,14,15,18,20,24</td>
<td>EXAM 1 WEDNESDAY April 20 Covers 16-18</td>
<td>Tut. Prep. 4</td>
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<td>5</td>
<td>19-6 to end/Circuits with capacitors, circuits with capacitors and resistors, meters</td>
<td>19 Problems 28,35,36,40,42,44, 48,50,51,55,58,60</td>
<td>Tut. Prep. 5</td>
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<td>6</td>
<td>20 to 20-7/Magnetism, magnetic field, magnetic force</td>
<td>20 Problems 4,5,10,14,16,26, 30,32,36,37</td>
<td>Tut. Prep. 6</td>
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<td>7</td>
<td>20-9 to end/Ampere's law, magnetic torque, motors, Hall effect, Mass spectrometer 21 to 21-8/Electromagnetic induction, Faraday's law, Lenz's law, electric generators, transformers</td>
<td>20 Problems 54,56,60 21 Problems 4,6,14,16,23,30,36</td>
<td>Tut. Prep. 7</td>
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<td>8</td>
<td>21-9 to end/Inductance, energy in magnetic field, LR circuits, AC circuits, impedance, phase angle, LRC circuits and resonance</td>
<td>21 Problems 40,44,47,53,54,58,62, 64,66,71</td>
<td>EXAM 2 WEDNESDAY MAY 18 Covers 18-21</td>
<td>Tut. Prep. 8</td>
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<tr>
<td>9</td>
<td>22/Electromagnetic waves, Maxwell's equations</td>
<td>22 Problems 2,3,6,11,17,20,22,24, 25,44</td>
<td>Tut. Prep. 9</td>
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**FINAL WEEK**

| June 6 | **FINAL EXAM, MONDAY, June 6, 10:15-12:15 PM, Covers 16-22,26** | Please plan your end of term travel accordingly. |                                |                                |

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