COURSE SYLLABUS: Physics 1404-002, Spring 2010, “General Physics II”
MWF 10:00-10:50 pm, Science Room 007

Instructor: Dr. Keith West Office hours: Daily 8:30-9:30, or check ahead
Rm 120 Science Bldg Phone: 742-3782 Email: keith.west@ttu.edu

Course materials:
Lab Manual for Physics 1404
Your notes from lectures: a good set of notes may be your most valuable resource for this course.

Physics 1404 is a non-calculus introductory physics course covering electricity, magnetism, light, and modern physics, thus providing a background for study in science-related areas. Partly fulfills Core Natural Sciences requirement. This is algebra/trig based 2nd semester physics. Math pre-requisites: Math 1320 (Algebra) and Math 1321 (Trig) or Math 1550 (Pre-calculus) or equivalent. The course level is the standard introductory physics level.

Core Competency Statement: Students graduating from Texas Tech University should be able to: explain some of the major concepts in the Natural Sciences and to demonstrate an understanding of scientific approaches to problem solving, including ethics.

Student Learning Outcomes: 1) Demonstrate knowledge of the scientific method and to contrast it with other ways of understanding the world. 2) Demonstrate knowledge of the tools and methods used by scientists to study the natural world. 3) Explain some of the major theories in the Natural Sciences. 4) Describe how Natural Sciences research informs societal issues, including ethics.

Learning Objectives: Students in this course will
   - Apply physical principles and the associated math to a wide range of physical situations
   - Model electric and magnetic fields and the related forces on charged objects
   - Analyze simple electrical circuits to determine electrical current and power
   - Examine the geometric optics of lenses and mirrors, ray tracing, and image formation
   - Get a brief exposure to topics in modern physics and the universality of physical laws

Exams and Grades: Three hour examinations 15% each; final examination 2x15% (lowest test grade dropped), homework 20%, laboratory 20% Scale: 100-A-86-B-74-C-62-D-50-F-0

Attendance: Regular attendance is expected. If a student has to miss a class for an official University event the instructor should be notified in advance. It is best to notify the instructor as soon as possible when a class is missed due to an emergency or illness. All students are expected to assist in maintaining a classroom environment that is conducive to learning and to avoid any distractive behavior. For each recorded unexcused absence, -1% taken off the course total.

Outside reading: There is a great deal of material to be covered in this course. In order to most effectively use our time in class, I will expect you to read ahead of where I am in lecture. While I don’t expect you to understand everything in the text, I do expect you to be somewhat familiar with the topics to be covered. If you don’t understand part of the chapter, please email me and let me know. This way I can spend class timing addressing the topics you need help on and not going over things you could pick up simply by reading the chapter.

The examinations cover the material from class, your lecture notes, and assigned homework, as well as lab exercises. The examinations will be closed book, without access to course notes, except that a 3x5 note card will be allowed.

Make-up examinations will not be given. In a serious emergency, please contact your instructor as soon as possible. Documentation may be requested if special arrangements for dealing with the missed grade are required. Normally a missed exam will constitute the grade to be dropped unless on official TTU event.
**Homework** will be collected and graded electronically using Mastering Physics. However, an occasional quiz and perhaps a problem on each hour exam will come directly from the assigned homework. Even though you may benefit from working in a group, make sure that you can and do actually work each problem. Grades on exams strongly reflect how well you can do homework problems on your own.

**Advice:** Spend at least 10 hours outside of class each week on the lecture material. (The laboratory is extra.) If you ignore this, you will almost certainly receive a lower grade than you are capable of obtaining. Spend this time studying the text and **lecture notes** and working as many problems as possible, not just those assigned. Always try to understand the physical principles and apply them to a specific situation, rather than memorizing results. Study the new material to be covered before each class period.

**Learning Assessment:** Certain problems on the each exam will be used as learning assessment tools. Pre- and post-tests are administered in the labs as a general assessment tool for this course but will not be directly correlated with individual students as part of the course grade.

**Exam Security:** The examinations are unique to this semester and are not to be reproduced or distributed. Do not be misled by exploitive businesses who claim that their materials substitute for proper preparation.

**Disability:** Any student, who because of a disabling condition may require some special arrangements in order to meet course requirements, should contact the instructor as soon as possible so that accommodations can be made. Appropriate documentation must be presented from the Dean of Student’s office.

**Tentative Topic Schedule: Physics 1404-002, Fall 2009**

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<th>Week of</th>
<th>Topic (Coverage begins in this week)</th>
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<td>Jan 13</td>
<td>Charge, Coulomb Forces, Electric Fields</td>
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<td>Jan 20</td>
<td>Electric Potential Difference, Capacitance</td>
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<td>Jan 25</td>
<td>Electric Currents, Ohm’s Law, Power</td>
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<td>Feb 1</td>
<td>DC Circuits, Kirchhoff’s Rules</td>
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<td>Feb 8</td>
<td><strong>EXAM I</strong> (Ch16-19); Magnetic Fields and Forces</td>
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<td>Feb 15</td>
<td>Induction, Faraday’s Law</td>
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<td>Feb 22</td>
<td>Electromagnetic Waves and Light</td>
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<td>Mar 1</td>
<td>Geometric Optics, Lenses, Mirrors</td>
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<td>Mar 8</td>
<td>Light as Waves, Diffraction, Interference</td>
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<td><strong>EXAM II</strong> (Ch 20-24), Special Relativity</td>
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<td>Mar 29</td>
<td>Early Quantum Theory, Bohr’s Atom Model</td>
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<td>Apr 5</td>
<td>Quantum Mechanics, Uncertainty Principle</td>
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<td>Nuclear Physics, Radioactivity</td>
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<td><strong>Exam III</strong> (Ch 26-30)</td>
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<td>Apr 26</td>
<td>Nuclear Reactions</td>
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<td>May 3</td>
<td>Other Topics or Review</td>
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**FINAL EXAM:** Tues May 11 7:30 – 10:00 am (for Section 002; MWF 10:00 meeting time)

Note that sections marked as optional (*) in the text will not be covered on any of the exams.