Phys 1404: General Physics II
Fall 2010

Professor: Dr. Beth Thacker
Associate Professor of Physics
Office: Science Building 15
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Email: beth.thacker@ttu.edu

Schedule: MWF 11:00pm – 11:50pm

Office Hours: MWF 12:00pm -1:00pm or by appointment.

Prerequisites: MATH 1320 and 1321.

Core Purpose Statement: Students graduating from Texas Tech University should be able to demonstrate problem solving skills and critical thinking skills, such as the development and use of models that are consistent with experimental evidence. This is consistent with the objectives for the Natural Science Core Curriculum Objectives listed below and will be demonstrated by the Learning Outcomes listed below.

Core Curriculum Objective: The objective of the study of the natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The natural sciences investigate the phenomena of the physical world.

Expected Learning Outcomes:

There are objectives at the beginning of each section.

Students should be able to demonstrate problem solving skills and critical thinking skills, such as the development and use of models that are consistent with experiment.

In particular students should

1) understand the concepts listed in the objectives and be able to demonstrate their understanding by the ability to solve problems and answer questions related to the concepts. They should be able to explain the concept clearly to another person (so that the other person understands).

2) understand how mathematical models are developed based on experimental evidence. They should be able to demonstrate this by demonstrating the ability to take and analyze data and develop a model based on the data, using graphing and other techniques, which can be used to predict the outcome of other experiments. They should understand the limitations models and be able to use them to make predictions.
**Methods for Assessing Expected Learning Outcomes:**

Learning outcomes will be assessed through quiz, homework and exam problems that require students to explain their reasoning and in-class discussions with their peers.


**Course Coverage:** Electricity, Magnetism, Optics and Modern Physics topics, as time allows.

**The Nature of the Course:** The course will be taught interactively. You will be asked to work with other students during class to make predictions or solve problems. You may be called upon during class to present a prediction or a solution. The focus of the course is on problem solving and critical thinking, not memorizing equations to get an answer. The process by which you solve a problem is more important than the final answer. You will be graded on your process on homework, quizzes and exams.

**Participation:** Participation will count as 10% of your grade. If you come to class and participate each day, not coming late, not leaving early, participating when asked, etc., you will receive the full participation grade. In addition, there may be pre-tests, post-tests, journals, surveys, and questionnaires that will count as part of your participation grade.

**Homework:** We will use the mastering physics homework system that you purchased with your textbook. In addition, you will be required to write out some of the homework problems by hand and turn them in for grading. Homework will be due every seven to ten days. Mastering physics homework assignments must be completed on the computer by the due date. Written homework assignments will be turned in at the beginning of the class on the day they are due. After the beginning of class, it is late. If you show up late for class, it is late. No homework, either mastering physics or written, will be accepted late. You will be allowed to drop one written homework. Homework will be graded and will count as 20% of your grade, with at least 8% of that grade for written homework. It is an important part of the class.

**Mastering Physics:** In order to enroll in Mastering Physics, you will need

1) the Course ID: THACKERFALL2010
2) the code that comes with your textbook
3) your email address

If you purchased a used text and your text did not come with Mastering Physics, you will be given the opportunity to purchase it online when you register.

**Turning Point Response Pads:** We will use Turning Point Response Pads (“clickers”) in class so that each of you can respond to questions posed. You will have to purchase the Turning Point Response Pads at the bookstore. Make sure you purchase the ones by Turning Technologies. This is part of your participation grade.

**Pre-tests, post-tests and surveys:** Pre-tests, post-tests and surveys may be given during class. These will not be graded, but they will be counted as part of your participation grade. You will receive full credit, if you do them and lose participation points, if you don’t.
Laboratory: The laboratory component of the course is very important. It should be taken seriously. The lab will consist of two parts, a two-hour laboratory experience and a one-hour “recitation” part. In the laboratory part, you will be working through Explorations and Investigations. Explorations are experiments and explorations of physical phenomena with a focus on understanding the phenomena. Investigations are experiments with a more rigorous focus on measurement skills and taking and analyzing data. The explorations will enhance and deepen your understanding of fundamental concepts that you have studied in lecture and your critical thinking skills. A solid understanding of both the Explorations and Investigations will help you on quizzes and exams. In the “recitation” part, you will be working on problem solving. You will be working problems with other students in a group. The teaching assistant (TA) will also help you with problem solving strategies. You will be turning your work in. You will also have laboratory homework and quizzes in the laboratory. The laboratory homework and quizzes will consist both of lecture and laboratory problems. The laboratory will be worth 20% of your grade. Lab is not something you should rush through to get done. It is an important part of your grade. It is a time that will help you understand the concepts and experience the physics. You should take it seriously.

Exams: There will be three midterm exams and a final exam. Each midterm exam will count 10% of your grade and the final will count 20% of your grade.

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<thead>
<tr>
<th>Exam</th>
<th>Date</th>
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<tbody>
<tr>
<td>Midterm exam 1</td>
<td>September 24, 2010</td>
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<tr>
<td>Midterm exam 2</td>
<td>October 22, 2010</td>
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<tr>
<td>Midterm Exam 3</td>
<td>November 19, 2010</td>
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<tr>
<td>Final Exam</td>
<td>Wednesday, December 15, 2010, 1:30pm – 4:00pm</td>
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Grades: The grades will be distributed as follows:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Participation</td>
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<tr>
<td>Homework</td>
<td>20%</td>
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<tr>
<td>Laboratory</td>
<td>20%</td>
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<tr>
<td>Midterm 1</td>
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<tr>
<td>Midterm 2</td>
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<td>Midterm 3</td>
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<tr>
<td>Final Exam</td>
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Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.