Physics 141: Foundations of Physics I
Fall 2018

Dr. Thomas E. Oberst
HSC 124  Ext. -7204  oberstte@westminster.edu
Office Hours: M 11 a.m. –12:30 p.m. & W 10 – 11:30 a.m. or by appointment

Meeting Times and Locations:
Lecture: TR 11 a.m. – 12:30 p.m., HSC 116/HSC 166
Lab: M 2 – 5 p.m. or 6:30 – 9:30 p.m., HSC 104
Exams: See course schedule for times, HSC 150

Resources:
• Stand-alone scientific calculator. Calculator apps on mobile devices are not permitted, since these devices could be used to communicate with others during exams.
• Dropbox account. Lecture slides, group problems, and homework solutions will be made available to you in a shared Dropbox folder shortly after they are covered in class.

Prerequisites
You are expected to be proficient in all of high school mathematics, with the exception of calculus. In particular, this course extensively uses algebra and trigonometry, as well as some geometry. For many problems, half of the credit is awarded purely for doing the math correctly.

Expectations and Assessment:
You are expected to master the basics of mechanics and thermodynamics as needed for:
• Advancement to PHY 142;
• Advanced study in other sciences (e.g. biophysics, physical chemistry);
• Placement exams (e.g. MCAT);
• Life – problem solving, critical thinking, and logical reasoning skills used in physics strengthen the brain.

You will be assessed on your ability to conduct laboratory experiments and solve quantitative problems in class, for homework, and on timed exams.

Grade Allocation
<table>
<thead>
<tr>
<th>Grade Allocation</th>
<th>Letter Grade Assignments</th>
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<tbody>
<tr>
<td>Reading Quizzes: 10 %</td>
<td>A  93 – 100 %  C+  77 – 80</td>
</tr>
<tr>
<td>Participation &amp; Labs: 10 %</td>
<td>A- 90 – 93  C  73 – 77</td>
</tr>
<tr>
<td>Homework: 10 %</td>
<td>B+  87 – 90  C-  70 – 73</td>
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<tr>
<td>Exams: 70 %</td>
<td>B  83 – 87  D  60 – 70</td>
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<td>B-  80 – 83  F  0 – 60</td>
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Late or missed components will be graded as zero percent, except in cases where a College-approved excuse is provided by the student in advance.

**Reading Quizzes**
You are expected to read each textbook chapter in advance of when it is covered in class. A brief reading quiz will be given at the start of the lecture on each chapter. Quiz questions will be graded on a modified pass-fail system: 1 point if mostly correct, 0 points if mostly incorrect, and ½ points if partially correct. These readings and quizzes are intended to prepare you for lecture and to let both you and I know early on which concepts may be causing difficulties.

**Participation**
Education research shows that physics is best learned by doing it yourself. The next best way is to work together with your classmates. Therefore, we will devote roughly half of the lecture to flipped-classroom activities such as think-pair-share clicker questions and group problems. This work will be graded using a pass-fail system: If you are present and participating, you get full credit. If you are absent or not participating, you get no credit.

**Labs**
In the lab section, you will work in groups to answer exploratory questions and perform experiments to strengthen concepts covered in the other components of the course. Specific instructions will be provided at the start of lab. Labs will be graded largely on your presence and participation, and will be combined with the participation grade component of the course.

**Homework**
In addition to group problems done in lecture, a set of written homework problems will be due upon the completion of each textbook chapter. To be successful in this course you will need to spend many hours outside of class solving these problems. It is natural that you may struggle with these problems: if you are not struggling, you are not learning. However, do not take that struggle to an unreasonable extreme by, say, spending more than two hours on any one problem. Seek help from tutors or your instructor once you are truly stuck. I encourage you to work in groups, but you should be an equal partner; copying someone else’s solutions is unacceptable. Homework will be graded on a 5-point scale based largely on effort:
<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>“excellent”</td>
<td>All the problems are worked all the way through, all are on the right path, and several have correct answers.</td>
</tr>
<tr>
<td>4</td>
<td>“good try”</td>
<td>All the problems are worked all the way through and most are on the right path.</td>
</tr>
<tr>
<td>3</td>
<td>“acceptable”</td>
<td>All the problems are worked <em>nearly</em> all the way through, but a few may be on the wrong path or may have hit dead ends.</td>
</tr>
<tr>
<td>2</td>
<td>“barely acceptable”</td>
<td>All of the problems are worked at least halfway through, but most are on the wrong path or have hit dead ends.</td>
</tr>
<tr>
<td>1</td>
<td>“unacceptable”</td>
<td>Problems are not even worked halfway through. Insufficient effort.</td>
</tr>
<tr>
<td>0</td>
<td>“don’t even bother”</td>
<td>Several problems are missing or barely started.</td>
</tr>
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</table>

Solutions will be posted following each assignment. You are expected, on your own, to check your homework against the posted solutions and spend time making corrections. This is where the majority of learning takes place. If you do not do this, your learning will be restricted and you will likely not perform as well on exams. Tutors and your instructor are available both before and after homework is due if you need help understanding the solutions.

**Exams**

The majority of your grade will depend on your ability to solve problems on timed in-class exams. I will provide you with an equation “cheat sheet” so that you do not need to memorize equations for exams – however you will need to know what the terms in each equation mean and how to apply the equations. Other than this equation sheet, you are only permitted to have a stand-alone calculator and something to write with during exams. Exam questions will be similar to the in-class and homework problems.

**Policies and Procedures:**

- This course will follow the policies and procedures on academic integrity as defined in the Westminster College *Student Handbook*. In short, make sure your exams represent your own work, and that you are making equal contributions to in-class problems, homework problems, and labs when you work on these in a group.
- On-time attendance is expected.
- Please put away mobile devices unless they are being used for class purposes.
- I am committed to helping students overcome any curricular barriers that may exist. Please come talk to me. The Westminster Office of Disability Resources may also be of help.