Course Syllabus

PHYS 101 Essentials of Physics

Fundamental Physical Principles: Mechanics

Fall 2014

Lecture: CRN 15070
Class: 12:00pm – 12:50pm: MWF; Location: 100 WIL
Prerequisite: High school algebra

Instructor: Bijan Shahir
Office: 177 Willamette Hall
Hours: Monday 1pm – 2pm, Wednesday: 8am–9am, Friday 2pm – 3pm, or by appointment
Phone: 541-346-4161
Email: bijan@uoregon.edu

GTFs:
Ignas Lekavicius: ilekavic@uoregon.edu, 271 WIL, Wednesday: 3pm – 4pm
Tom Tong: ttong2@uoregon.edu, 217 WIL, Thursday: 1pm – 2pm
Bishara Korkor: bkorkor@uoregon.edu, 217 WIL, Tuesday: 11am – 12pm

Required Materials: Here is the student pricing for all options for PHYS 101 at The Duck Store:
    $190.25 – text with MasteringPhysics Access Code
    $127.25 – loose-leaf version of text with MasteringPhysics Access Code
    $110.00 – MasteringPhysics Access Code with FULL e-text version of the text

i>clicker

Course Content:
This course focuses on mechanics, a subject that is the foundation of all of physics. After a quick introduction to early natural philosophies, most of this course focuses on Newtonian mechanics and its manifestations. Newton's three laws of motion provide an early example of the changes in western thought embodied by The Enlightenment. Newton unified our understanding of 'heavenly' and 'earthly' forces while at the same time providing a framework within which natural phenomena could be understood.

The first third of the course will be spent investigating the kinematic concepts of force, mass, acceleration, velocity & displacement, and the relationships among these. The next third will deal with dynamical phenomena described in terms of momentum, work, and energy. The course concludes by discussing Newtonian gravitation, satellite and planetary motions.

The course is primarily conceptual in nature, using only simple high school algebra to help illuminate the underlying physical phenomena. Simple numerical and conceptual problems will be assigned in homework sets, and use of a calculator will be helpful but not essential.
**Course Objectives:**
During Physics 101 course, you will learn the basic principles of physics, otherwise known as Newtonian Mechanics. You will also learn to analyze everyday phenomena utilizing physical laws. Lastly, you will use logical progression of your reasoning to draw a sound scientific conclusion.

**Blackboard:**
At [https://blackboard.uoregon.edu](https://blackboard.uoregon.edu) you may login and access course documents such as this syllabus. In addition, you may view announcements, course materials, scores on homework and tests at any time.

**Log in:**
Use your Username i.e. Duck ID without "@uoregon.edu" and Password to login to Blackboard. Be sure to log out when done - use the "Logout" button at the top of most blackboard pages. If you have problems of logging in please contact: [blackboard@ithelp.uoregon.edu](mailto:blackboard@ithelp.uoregon.edu).

**i>clicker:**
There will be several clicker questions in each hour of the lecture. You will get credits for being in class for every hour of the lecture and clicking on each question. Additionally, you will get an extra credit for answering each question correctly. 10% of your overall grade will be devoted to the clicker questions. The two lowest score of the clicker questions will be dropped.

**Login:**
You only have to register once, and if you have already registered your i>clicker this term (Fall 2014), ignore this part. To register your i>clicker, please do the following:
1) Log in to Blackboard
2) Click on “PHYS 101 (Fall 2014; 15070), Essentials of Physics” course
3) In the upper left corner (green rectangle) click on “i>clicker Registration”
4) Enter the 8-character of your i>clicker Remote ID or 12-character i>clicker GO ID in to “i>clicker Remote /GO ID:” box
5) Press the “Submit” button.

**MasteringPhysics: (Course ID: PHYS101MP)**
On Blackboard, go to PHYS 101 course “Home Page” and click on MasteringPhysics link in the upper left corner of the “green rectangle” and follow the instructions. OR

On Blackboard, go to PHYS 101 course “Home Page” and click on “Course Information”, and then click on the link “MasteringPhysics Registration Guidelines” and follow the instructions. OR


**Homework:**
We will be using a web based homework system called MasteringPhysics. You will submit your homework answers via computer. This is to give quick feedback to homework questions. You will be allowed a stated number of attempts to submit a correct assignment (Saving homework does not count as a submission.) **THE DUE DATES ARE SET FOR FRIDAYS, AND NO LATE HOMEWORK WILL BE GRADED.**
Note: the questions in MasteringPhysics are written algorithmically and variables/numbers are randomly generated, so the numbers for the problems and question will be different for each student. If you figure out how to solve the problem as a group, you will still have to calculate your values for your own answer. The lowest homework grade will be dropped.
Help Sessions:
Drop-in Help Sessions are available at Willamette Room 147. Please make sure pick up a schedule in the Physics Office.

Successful Problem solving:
1. Draw a clear diagram(s) indicating the situation – if needed
2. Think about the principles involved. Write them down!
3. Write down the quantities that are known and the quantities you want to know
4. Write down numbered steps indicating the logical progression of your reasoning
5. Clearly mark your answer (underlined or in a box)
6. Don’t forget units! Check your significant figures.
7. Check your answer to see if it is reasonable

Exams:
1) Midterm Exam 1: Wednesday, October 22\textsuperscript{nd} (Week 4)
2) Midterm Exam 2: Wednesday, November 12\textsuperscript{th} (Week 7)
3) Final Exam (Comprehensive): Wednesday, 10:15am, December 10\textsuperscript{th} (Week 11)

Quizzes:
We’ll have 10 – 15 minute quiz on Wednesdays with the exception of mid-term weeks. Your lowest quiz grade will be dropped.

A 5x7 inch index card with formulae on it will be allowed in quizzes and exams. No late homework, or make-up quizzes and exams will be allowed. For extreme circumstances, exceptions will be made ONLY for midterm and final exams.

Weekly Schedule:
The given schedule is tentative; changes will be discussed in class and posted online.

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapters</th>
<th>Lecture Topics</th>
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<tbody>
<tr>
<td>September 29</td>
<td>1, 2</td>
<td>Absolute Science, Newton’s 1\textsuperscript{st} Law of Motion - Inertia</td>
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<tr>
<td>October 6</td>
<td>2, 3</td>
<td>Linear Motion</td>
</tr>
<tr>
<td>October 13</td>
<td>3, 4</td>
<td>Newton’s 2\textsuperscript{nd} Law of Motion</td>
</tr>
<tr>
<td>October 20</td>
<td>5</td>
<td>Newton’s 3\textsuperscript{rd} Law of Motion + 1\textsuperscript{st} Midterm Exam (Chapters:1- 4)</td>
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<tr>
<td>October 27</td>
<td>5, 6</td>
<td>Momentum</td>
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<td>November 3</td>
<td>6, 7</td>
<td>Energy</td>
</tr>
<tr>
<td>November 10</td>
<td>8</td>
<td>Rotational Motion + 2\textsuperscript{nd} Midterm Exam (Chapters:5- 7)</td>
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<td>November 17</td>
<td>8, 9</td>
<td>Gravity</td>
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<td>November 24</td>
<td>9, 10</td>
<td>Projectile and Satellite Motion</td>
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<tr>
<td>December 1</td>
<td>10, 11</td>
<td>The Atomic Nature of Matter</td>
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<tr>
<td>December 10</td>
<td>1 - 11</td>
<td>FINAL EXAM Comprehensive Wednesday, 10:15am</td>
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Important Dates ([http://registrar.uoregon.edu/calendars/academic](http://registrar.uoregon.edu/calendars/academic)):

- Monday of 2\textsuperscript{nd} week (October 6): Last day to drop without a “W” and only 75% tuition refund
- Wednesday of 2\textsuperscript{nd} week (October 8): Last day to add classes
- Sunday after 7\textsuperscript{th} week (November 16): Last day to withdraw (drop with a “W”) or change to P/NP
- Thurs/Fri of 9\textsuperscript{th} week (November 27 - 28): Thanksgiving Day; no classes are held
Course grade determined by:
Homework: 15%
i>clicker problems: 10%
Quizzes: 15%
2 midterm exams: 15% + 15%
Final exam (comprehensive): 30%

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<tr>
<th>Final Course</th>
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<tbody>
<tr>
<td>97% or above</td>
<td>A+</td>
<td>83% to 86.9%</td>
<td>B</td>
<td>70% to 72.9%</td>
<td>C-</td>
<td>Less than 60%</td>
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<tr>
<td>93% to 96.9%</td>
<td>A</td>
<td>80% to 82.9%</td>
<td>B-</td>
<td>67% to 69.9%</td>
<td>D</td>
<td>F</td>
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<tr>
<td>90% to 92.9%</td>
<td>A-</td>
<td>77% to 79.9%</td>
<td>C+</td>
<td>63% to 66.9%</td>
<td>D+</td>
<td></td>
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<tr>
<td>87% to 89.9%</td>
<td>B+</td>
<td>73% to 76.9%</td>
<td>C</td>
<td>60% to 62.9%</td>
<td>D-</td>
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Curving Grades:
There will be a small adjustment at the end of the term if the course grades on the whole don’t meet my expectations. I will not make this decision until after all the work for the term is done (including the final exam) – the individual assignment will not be graded on a curve.

Special Accommodations:
If you are currently registered with AEC (Accessible Education Center), for a documented disability, please present your paperwork to me as close to the beginning of the term as possible so that we can design a plan for you. If you have a disability but are not registered with AEC, you should contact them as soon as possible (http://aec.uoregon.edu). It is much more likely that measures can be taken to provide adequate special accommodation if the organization is done through AEC.

Student Conduct:
Mutually respect in class is paramount. Violations of the student conduct code result in the incident being included on your student conduct record and can result in a failing grade on any course work related to the violation or a failing grade in the course. The University of Oregon requires all instances of cheating be reported, no matter how small. Cheating includes, but is not limited to:

- Looking at another student’s exam during a test
- Copying the work of another person (student or otherwise) and submitting it as your own
- Copying and pasting from the textbook, Google, Wikipedia, Yahoo, or any external sources are absolutely prohibited
- Using any materials except those explicitly approved during a test-taking situation
- Putting your name on another person’s work, or vice versa.
- Resubmitting graded work that was altered after being returned
- Every effort will be made in this class to deter dishonesty through classroom procedures. You are all welcome to work in groups on homework assignments, but each person must submit their own assignment on-line. It is degrading to impose draconian security measures to enforce honesty. Instead, we will use the honor system in this course and allow each of you to uphold your personal standards of conduct. For those of you who have failed to develop your own ethics, the University has designed the Student Conduct Program. Suspected academic dishonesty will be reported.

**For a list of other descriptions of cheating, see the Student Conduct Code: http://uodos.uoregon.edu/StudentConductandCommunityStandards/StudentConductCode/tabid/69/Default.aspx**
Suggestions for Successful Study:
1. Don’t get behind on readings or homework. Physics is like a ladder, one step at a time.
2. Participate in class, ask questions, and make use of my office hours and Graduate Teaching Fellows (GTFs).
3. Read ahead in the book. Even reading the first few pages of each lesson will help the material sink in quicker during lecture and allow you to ask meaningful questions.
4. Keep all your old midterms, and quizzes. You’ll find them useful when you’re studying for future tests.
5. University courses, in general, require at least 2 to 3 hours/week of work outside the course for each credit hour. This means you should devote at least 8 to 12 hours/week working outside class to do well in this course!
6. By devoting adequate time, managing your time effectively, and practicing good study/problem solving skills you should succeed in this course.
7. BIG HINT FOR DOING PHYSICS PROBLEMS: LEARN THE PHYSICS, UNDERSTAND THE CONCEPTS, PARTICIPATE IN CLASS DISCUSSION, AND READ THE BOOK!!! It will make things so much easier!

Showing Work:
While doing your MasteringPhysics homework, I recommend having scratch paper at hand. Even though MasteringPhysics does not grade you on your process, having a comprehensive thought process is necessary. It will also help you track down mistakes that you made if the first answer you submit is incorrect. Remember: On quizzes and exams showing your work will be extremely important.

Laptops and Cell Phones in Class:
The use of laptop computers and phones in class is NOT allowed. Why? Several studies show that students using laptops and phones in class spend a great deal of time on non-class related activities (texting, FB, playing games, watching soap operas, etc.) and that these distractions negatively impact both learning and grades. This alone isn’t a reason to ban laptops; you’re responsible for your own performance in class. In addition, however, studies have shown that laptop use distract and impacts the learning of other students nearby. (E.g. Fried, C.B. Computers & Education 50, 960-914 (2008).) Plus, students have complained about the environment created by their classmates’ laptop use. Taking notes by hand, by the way, is more effective in cementing concepts in your mind.

The University of Oregon community is dedicated to the advancement of knowledge and the development of integrity. In order to thrive and excel, this community must preserve the freedom of thought and expression of all its members. The University of Oregon has a long and illustrious history in the area of academic freedom and freedom of speech. A culture of respect that honors the rights, safety, dignity, and worth of every individual is essential to preserve such freedom. We affirm our respect for the rights and well-being of all members.

We further affirm our commitment to:
- Respect the dignity and essential worth of all individuals
- Promote a culture of respect throughout the university community
- Respect the privacy, property, and freedom of others
- Reject bigotry, discrimination, violence, or intimidation of any kind
- Practice personal and academic integrity and expect it from others
- Promote the diversity of opinions, ideas, and backgrounds that is the lifeblood of the university

An equal opportunity, affirmative action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.