Course Description

The labs we will be using have been designed to engage you an active role in your learning Classical Mechanics. Self-assessment is an important form of internal feedback for this process. In a very real sense we will be aiming to participate in the process of science in order to learn science.

PHYS 204
Intro Physics Lab
Fall 2018
CRNs: 15020-15027
Pre/Co-requisite: PHYS 201

As part of the Science Literacy Program we will pay special attention to uncovering ways science is connected to larger societal issues and big ideas across and within the discipline. SLP courses include General Education courses for non-science majors and courses for science majors taught by teams of faculty, graduate fellows, and undergraduate scholars, who will include opportunities during classtime for you to engage with the class topics through a variety of activities. For more information about the program scilit.uoregon.edu

What are Office Hours?

We are here to help guide your learning and help you succeed during the course. We are available during office hours to answer questions about this course or provide additional resources. We invite you to come visit us, so we can meet you and learn more about your interests in the course. Office Hours are a great way to make connections with faculty and graduate students which may be helpful when you need future letters of recommendation or academic advice.
Course Goals

In this course students will

- Understand the Process of Science.
- Draw meaningful conclusions from observations of the physical world.
- Construct knowledge in a way that does not rely on an outside authority.
- Develop accurate, evidence based, plain language explanations for many of the topics and phenomena discussed in the accompanying lecture course.
- Gain experience collecting and analyzing data, with the ability to extract physical quantities from fit parameters used in graphical representations.

How will you be graded?

Grades will be based on lab sheets, homework, lab follow up quizzes, and the laboratory final. **You must attend and complete all labs to pass the course.** Makeup labs will only be granted on an excused absence which must be related to emergency type situation. Your lowest non-zero score from each category will be dropped. The relative weights will be as follows:

- Prelab: Graded on a 2 or 0 basis. A "2" means you have properly done the prep work 16
- Lab sheets: Graded on a 0-8 basis. The grade will reflect the effort we perceive to have gone into the lab. 64
- Follow up quizzes (5 points each) 40
- Homeworks (20 points each) 160
- Final Exam (Thursday, December 6, 5-7PM, room 150 Columbia) 100

The Approximate Grade Distribution will be as follows:


What supplies will you need?

There is no lab text. Labs will be available on Canvas. You are encouraged but not required to print them each week. (i.e. we will always have copies available)

How you’ll know you’re learning.
In addition to the global Course Goals above, Learning Outcomes will be associated with each of the lab. These are intended to aid self-assessment.

*Pre-Labs (2 points each):* A completed pre-lab is worth 2 points of your lab grade. Pre-labs associated with lab activities will be posted to Canvas no later than the Friday prior to that lab. The goal of the pre-lab is to help organize your current understanding of the topics investigated in the lab. A portion of your lab score will be based on annotation of the prelab after the lab has been completed.

*Lab Sheets (8 points each):* Plan to stay in the lab until you can show your instructor the completed lab sheets with all questions answered completely. The questions throughout the lab sheets as well as the Check-Point discussions provide formative assessment to you and your teaching team. It is to your advantage to complete your lab write-up during or just after your lab section, when what transpired is still fresh in your mind. To develop and support the habit of self-assessment, half of your lab points will be associated with annotation of your Pre-lab.

*Homework (20 points each):* Problems sets asking you to apply the ideas investigated in lab. Expect some questions that ask you to revisit ideas that were investigated in previous labs to be interleaved throughout the term. Whenever possible, use evidence/observations from lab in your explanations.

*Follow-up Quizzes (5 points each):* To assist and assess conceptual understanding, weekly quizzes will be posted to Canvas. These will open at 6PM on Friday and must be submitted by 11:59pm the following Sunday. These quizzes are somewhat probing and have been designed to gauge the depth of your conceptual understanding. Follow-up quiz results will be used to inform the Teaching Teams weekly meeting so that we may use the limited time we have available for class-wide discussion most efficiently. At the end of the term, you will have the opportunity to re-do the Follow-up quizzes. Though primarily intended as a study resource for the final exam, this also offers a chance to earn back some (typically 4/5) of the Follow-up points that you might have lost throughout the term. Only the higher score of the Follow-up and the Follow-up Redo will contribute to your course grade.

*Final Exam*
The summative assessment for this course will be a cumulative final exam which will be held:
Thursday, December 6, 5-7PM
Room 150 Columbia

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**Academic Integrity**
All students are expected to complete assignments in a manner consistent with academic integrity. Students must produce their own work and properly acknowledge and document all sources (ideas, quotations, paraphrases). Students can find more complete information about the University of Oregon’s Policy on Academic Dishonesty in the University of Oregon Student Handbook.
A few things to help you succeed in this course

1. **Participate!** Class Participation is more than sitting as a warm body in the class. Please come to class prepared to participate in group work and class discussions. Participation includes respect for your learning community by coming to class on time, turning off cell phones, and paying attention during class.

2. Regularly reflect on your learning. Taking the time to think about your learning has been shown to help you learn better.

3. Please feel free to ask questions in class, during office hours, and via email.

4. If you miss a lab due to some circumstance beyond your control, contact the instructor as soon as you are able. We may be able to make arrangements to allow you to complete that weeks lab with another section.

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**Campus resources to support your learning**

**Physics Drop-In Help Center**
Free, drop-in help is available in room B010 of the Science Library starting the second week of classes. The schedule will be available on Canvas.

**Tutoring and Learning Center (TLC)**
Drop-in math and writing support in addition to tutoring, study skills support, and Class Encore. Located in the 4th Floor Knight Library (541) 346-3226, tlc@uoregon.edu

**Counseling Center**
Call anytime to speak with a therapist who can provide support and connect you with resources. Located on the 2nd Floor of the Health Center (541)346-3227

**Accessible Education Center**
Provides supports for support student instructional accommodations. If there are aspects of the instruction or design of this course that result in barriers to your participation, please contact me so together we can strategize how you can get the most out of this course. AEC located on the 1st Floor of Oregon Hall (541) 346-1155, uoaec@uoregon.edu

**Center for Multicultural Academic Excellence (CMAE)**
Mission is to promote student retention and persistence for historically underrepresented and underserved populations. We develop and implement programs and services that support retention, academic excellence, and success at the UO and beyond. We reaffirm our commitment to all students, including undocumented and tuition equity students. Located on the 1st Floor of Oregon Hall (541) 346-3479, cmae@uoregon.edu

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**Inclusivity**
Open inquiry, freedom of expression, and respect for difference are fundamental to a comprehensive and dynamic education. We are committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities.

**Duty to Report**
As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. As a member of the university community, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals here https://safe.uoregon.edu/services
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<thead>
<tr>
<th>Dates</th>
<th>Topic &amp; Learning Objectives</th>
<th>Reading and Assignments Due</th>
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<tbody>
<tr>
<td>9/25-9/27</td>
<td>Lab 1- Kinematics I Position and velocity</td>
<td>*Due: Friday 9/28 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 9/30</td>
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<td>10/2-10/4</td>
<td>Lab 2-Kinematics II Position, velocity, and acceleration</td>
<td>*Due: Friday 10/5 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 10/7</td>
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<td>10/9-10/11</td>
<td>Lab 3- Projectile Motion Applying Kinematics in 2 dimensions</td>
<td>*Due: Friday 10/12 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 10/14</td>
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<td>10/16-10/18</td>
<td>Lab 4- Force, Mass, and Acceleration Understanding Newton’s Laws</td>
<td>*Due: Friday 10/19 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 10/21</td>
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<td>10/23-10/25</td>
<td>Lab 5- Investigation Lab 1 Design an experiment</td>
<td>*Due: Group Write-up Due before leaving class Follow-up Quiz Submitted by 11:59pm Sun 10/28</td>
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<td>10/30-11/1</td>
<td>Lab 6- Circular Motion I Use our tools to describe circular motion</td>
<td>*Due: Friday 11/2 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 11/4</td>
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<td>11/6-11/8</td>
<td>Lab 7- Circular Motion II Extend discussion of circular motion</td>
<td>*Due: Friday 11/9 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 11/11</td>
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<td>11/13-11/15</td>
<td>Lab 8- Momentum Impulse-Momentum Relation</td>
<td>*Due: Friday 11/16 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 11/18</td>
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<td>11/20-11/22</td>
<td>Thanksgiving Week (No Lab)</td>
<td>*Do: Remember, you are what you eat.</td>
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<td>11/26-11/29</td>
<td>Lab 9- Energy Work and Energy; Conservation Laws</td>
<td>*Due: Friday 11/30 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Redos available. Due by 12/6 5pm</td>
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<td>12/6</td>
<td>Final Exam</td>
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