

PHYS 205

Intro Physics Lab

Winter 2019

CRNs: 25676 - 25683

Pre/Co-requisite: PHYS 202

When & where we meet:

25676 Tue 9 - 11:20am

25677 Tue 12 - 2:20pm

25678 Tue 3 - 5:20pm

25679 Wed 9 - 11:20am

25680 Wed 2 - 5:20pm

25681 Wed 6 - 8:20pm

25682 Thu 12 - 2:20pm

25683 Thu 5 - 7:20

**All Labs meet in Room
13 Willamette Hall**

This course is taught



with unionized labor.

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.



SCIENCE LITERACY PROGRAM

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

Your Teaching Team

Instructor Name: Dr. Billy Scannell scannell@uoregon.edu

Please call me "Billy" in all communications

Office Location: 145 Willamette Hall

Office Hours: Open Door Policy and 3-4 Tue & Thu

Instructor Phone Number: 541-346-5256

Lead GE:

Trevor Brunnenmeyer tbrunnen@uoregon.edu

Office Hour: Thu 10:30, Room 417 Willamette Hall

GEs (GE, email, Office hour time and location in Willamette Hall)

Claire Albrecht, calbrec2@uoregon.edu, Wed 9am Room 217

Matthew Ball, mball2@uoregon.edu, Mon 9am Room 217

Brittany Carter, bcarter4@uoregon.edu, Wed 9am Room 76

Deion Fellers, dfellers@uoregon.edu, Fri 10am Room 220

Adrian Helmling-Cornell, ahelmlin@uoregon.edu, Tue 9am Room 217

Nicolae Istrate, nistrate@uoregon.edu, Thurs 9, Room 238 **Huestis Hall**

Bishars Korkor, bkorkor@uoregon.edu Mon 12, Room 238 **Huestis Hall**

Nicholas Luongo, nluongo@uoregon.edu, Thurs 2:30pm Room 215

JD Meritt, jmeritt@uoregon.edu, Mon 1pm Room 219

Jeremy Metzner, jmetzner@uoregon.edu, Wed 12 pm Room 217

Rich Moraski, rmoraski@uoregon.edu, TBA Room 77

Alex Quinn, aquinn2@uoregon.edu, Thurs 4pm Room 220

Amy Turner, aturner2@uoregon.edu, Thurs 11am Room 78

Nathan Villiger, nvillig2@uoregon.edu, TBA Room 219

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 and replaced with the average remaining scores. Late assignments will not earn full credit.

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 (Wednesday, March 20, 5 - 7PM, room 150 Columbia)	100

The Approximate Grade Distribution will be as follows:

380-333 = A, 332 - 285 = B, 284 - 238 = C, 237 - 191 = D, 171 or below = F.

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:

**Wednesday, March 20, 5 - 7PM
Room 150 Columbia**

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 week's lab with another section.

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>

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, uoac@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

Tentative Course Schedule

Dates	Topic	Assignments Due
Week 1		
1/8-1/10	Lab 1- Temperature Heat and Thermal Energy	Due: Friday 1/11 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 1/13
Week 2		
1/15-1/17	Lab 2 - Calorimetry	Due: Friday 1/18 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 1/20
Week 3		
1/22-1/24	Lab 3- Gasses	Due: Friday 1/25 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 1/27
Week 4		
1/29-1/31	Lab 4- Simple Harmonic Motion	Due: Friday 2/1 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 2/3
Week 5		
2/5-2/7	Lab 5- Wavespeed	Due: Friday 2/8 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 2/10
Week 6		
2/12-2/14	Lab 6- Standing Waves	Due: Friday 2/15 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 2/17
Week 7		
2/19-2/21	No Lab this week	Make-up Labs (if needed)
Week 8		
2/26-2/28	Lab 7 - Light Waves	Due: Friday 3/1 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 3/3
Week 9		
3/5-3/7	Lab 8 - Light Rays	Due: Friday 3/8 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Submitted by 11:59pm Sun 3/10
Week 10		
3/12-3/14	Lab 8- Cone of Light	Due: Friday 3/15 (Lab sheets, annotated Pre-Lab, HW) Follow-up Quiz Redos available. Due by Start of Final
Finals Week		
3/18-3/22	Final Exam Wednesday, March 20 5pm Room 150 Columbia	