

PHY 117: Introductory Physics 1

Fall 2021

Web: Course Moodle site
Class Hours: Mo We Fr 2:10-4:00PM, Tu 4:10-5:00PM
Class Room: Sabin-Reed 305
Text: Physics for scientists and engineers: a strategic approach (2nd edition)
* available to borrow for the entire semester from Nielsen Library –
you do **not** need to purchase a copy!

Instructor: Casey Berger (section 02)
E-mail: cberger@smith.edu
Free help sessions: TBD and by appointment: <https://calendly.com/caseyberger>
* zoom or in-person
Office: McConnell 310A

Instructor: Gary Felder (section 01)
E-mail: gfelder@smith.edu
* You are welcome to attend office hours/help sessions or schedule
one-on-one meetings with either instructor for PHY 117.
We are both happy to support you!

Land Acknowledgment

We acknowledge that we are on Indigenous land: the territory of the Nonotuck. We are grateful for the opportunity to live, learn, and grow on this sacred land, and extend our respect to citizens of this nation who live here today, and to their ancestors who have lived here for hundreds of generations. We recognize the repeated violations of sovereignty, territory, and water perpetrated by invaders who have impacted the original inhabitants of this land for 400 years. We know this acknowledgement is insufficient, and does not undo the harm that has been done and continues to be perpetrated now against Indigenous people and their land and water.

Course Description

The concepts and relations (force, energy and momentum) describing physical interactions and the changes in motion they produce, along with applications to the physical and life sciences. Lab experiments, lectures and problem-solving activities are interwoven into each class. Discussion sections offer additional help with mathematics, data analysis and problem solving.

This course satisfies medical school and engineering requirements for an introductory physics I course with labs. Prerequisite: one semester introductory calculus course covering the basic principles and methods of integration and differentiation (MTH 111 or equivalent).

A course schedule will be made available on Moodle, subject to change. The schedule on Moodle will be kept up-to-date, and any changes in the schedule will be announced in class and over email.

Course Objectives

By the end of this course, you will be able to

- identify and describe the physical concepts and principles governing mechanics (both statics and kinematics) of solids
- connect physical scenarios with introductory calculus, including use of vectors
- employ various experimental setups, make accurate measurements, and understand the limitations of measurement devices
- describe sources of error and uncertainty and calculate their effect on a measurement
- apply a four-step problem solving method to physical scenarios, including identifying an appropriate model, visualizing the scenario, solving using a mathematical representation, and assessing your results

Course Topics

This course covers the following content:

- Measurement, Error, and Uncertainty
- Kinematics (1D and 2D)
- Forces and Newton's Laws
- Center of Mass and Momentum
- Energy and Work
- Rotation and Torque
- Special Relativity

Classroom Expectations

From me, you can expect

- I will stay home if I am feeling sick and make arrangements to ensure you don't miss critical material
- I will work with you to arrange accommodations when you need them
- I will respect your time by starting and ending class on time
- I will answer your questions thoughtfully, and if I don't know the answer, I will follow up in a timely manner
- I will model respect, openness, and engagement, and foster a supportive and inclusive environment
- I will be honest when I make mistakes, because failure is part of growing

From you, I will expect

- That you will stay home if you are sick and contact me via email to arrange accommodations
- That you genuinely attempt to engage with the material
- That you ask questions if you are confused (you may do this privately – there is no obligation to ask during class hours)
- That you communicate with me when you have problems that interfere with your ability to engage with the coursework
- That you treat your peers with respect and openness, and that you participate in creating an inclusive, supportive classroom

A general note on emails and availability: If you email me on a weekday, you can expect a response from me within 24 hours. If you email me on a weekend, you can expect a response from me by class time on Monday (or the first day back if it's a long weekend or holiday).

A general note on COVID-19: If you are feeling at all unwell, please do not come to class. Not only is rest important for your own health, but it's also important to do all you can to protect your community. Stay home, message your instructor to arrange any accommodations (we will be very flexible!), and contact the Schacht Center to arrange a symptomatic test (413-585-2250).

As we are required to mask indoors, there may be issues with hearing or understanding what your instructor is saying. It is **always okay** to interrupt to let us know you can't hear us. This is a difficult situation for everyone, and we will all need to be patient and compassionate with each other and ask for what we need.

More information about Smith's COVID-19 response is available at the [Culture of Care](#) page.

Course Components and Grading

The course grading will be distributed in the following way:

- Pre-Class Check-Ins (PCCIs) : 10%
- Class Participation: 10%
- Homework: 15%
- Midterms: 50%
- Final Exam: 15%

Grades are not curved; your grade depends only on your own performance, supporting your fellow students will help every one of you. We intend to follow the standard Smith College rubric for final course grades (A = 93 or higher, A- = 90 or higher, B+ = 87 or higher, etc.)

Daily Reading and Pre-Class Check-Ins (PCCIs)

There will be reading assigned for each class. You should read the assigned sections prior to coming to class and complete the PCCI, which will be due one hour before class begins. The PCCI includes two kinds of problems: practice on the material from the previous class and feedback to the instructors about how well you understood the reading. This helps you by giving you an opportunity to practice what we discussed in the previous class (and this is most effective if you do this within 24 hours of learning the skill or concept, so we encourage you to do this as soon as possible after the previous class) and by giving your instructors a chance to see what concepts need clarifying.

Given the purpose of the PCCIs, we will not offer extensions (even for computer crashes, Internet failures, etc.). But in recognition of the fact that everybody will have an occasional conflict, we will drop your 3 lowest PCCI grades when calculating your course grade. You are of course still responsible for the material covered, even if you skip a PCCI.

Class Participation

Your class participation grade does not depend on you knowing the right answers or getting the right lab results, but on fully participating in all the in-class activities and attending the weekly problem solving sessions. Again, we recognize that perfect attendance and involvement is not perfect – you can miss up to 10% of participation opportunities before it starts to count against you. We are looking for effort, not perfection.

Homework

Weekly homework will be due on Wednesdays at the start of class. We encourage you to get to know your classmates and work together on homework when you get stuck on a problem. However, your write-up must be your own; you may not simply copy another's work. Homework problems will be graded on a coarse scale: $\checkmark+$ = 100%, \checkmark = 90%, $\checkmark-$ = 75%, X = 40%, and

0% for no submission.

We are willing to be flexible when it comes to late homework, but please reach out directly to your instructor to arrange deadline extensions. The lowest homework grade will be dropped when calculating your course grade.

As part of each homework, you will be asked to assess your own performance on the previous homework. The graders will provide feedback, and we ask you to read over that feedback and evaluate where you made mistakes. This will help you in preparing for the midterms and the final, and is just good practice in general!

Labs

Lab activities will be integrated into many classes, and often the data you collect in these activities will be used in your weekly homework assignments. Completing the labs is an important part of your learning in the course, **so you may not use another student's data for your homework problem**. If you are unable to attend a class you may contact the instructor (in advance if possible) about finding a time to make up the lab work.

Midterms

Half of your course grade will be based on the four midterms that will be self-scheduled. The midterms will cover material up through the weekly homework due that Wednesday. Any earlier material from the course may appear on the midterm as well. The best way to study for the midterms is to make sure you know how to do all the weekly homework problems.

There will be opportunities to regain points on midterms. (See the [regrading](#) policy below).

Final Exam

The final exam will be a comprehensive test that will be your last chance to show mastery of all of the skills you've learned during the semester.

Regrading Policy

You will be given the opportunity to gain points back on two of your midterms. This process is described below.

For each problem you would like to be considered for regrading, you must

- solve the problem again
- write up a short explanation of what went wrong the first time, and how your new solution differs from your original solution
- schedule a 30 minute meeting with your instructor to discuss the changes
- submit your new solution, your old solution, and your write-up to your instructor at least 24 hours before your meeting

This process must occur no more than two weeks after the exam that you are seeing a grading adjustment for. You may regain up to 90% of the points you lost on the midterm.

University Policies

Academic Integrity and Honesty

Honor Code Statement:

Students and faculty at Smith are part of an academic community defined by its commitment to scholarship, which depends on scrupulous and attentive acknowledgement of all sources of information and honest and respectful use of college resources.

Smith College expects all students to be honest and committed to the principles of academic and intellectual integrity in their preparation and submission of course work and examinations. All submitted work of any kind must be the original work of the student who must cite all the sources used in its preparation.

Students voted to establish the academic honor system in 1944. The basis of the Academic Honor Code is articulated in Article X of the SGA Constitution and Article VII of the SGA Bylaws.

Accommodations for Disabilities

I **do not** require a letter from ODS to make accommodations for disabilities. If you would like to work through ODS, I am happy to do so, and you can contact them at ods@smith.edu. You may also just let me know what accommodation you need, and we will work to ensure you are properly supported. You do **not** need to tell me your disability.

Resources

There are tons of resources at Smith to help you succeed in this course and in your college career. If you think of resources I have not included here, please let me know, so I can add them. You can also find this resources page on the moodle site.

- Your instructors! We are both here to help you, and you are welcome to reach out to either or both of us if you need help
- Your learning assistants. They have been where you are, and not very long ago, and they are happy to answer questions
- [Spinelli Center math reviews](#)
- [Workshops for time management and managing stress](#)
- [Writing help from the Jacobson Center](#)
- [Crisis Resources](#)
- [Counseling Resources](#)

- [Wellness Services](#)
- [Gender Identity and Expression](#)
- [Where to report sexual misconduct and other forms of discrimination](#)

Please note that your instructors are [Responsible Reporters](#).