

University of Pittsburgh

Summer Term I, 2020-2021

Course title (section): ***Phys 0110: Introduction to Physics 1*** (20044, SEC 1300)

Class meetings: MoTuWeTh 9:00 am. Zoom Meeting ID: 99558759306. Passcode: on Canvas.

Course instructor: Dr. Matteo Broccio, [mbroccio at pitt] –preferred contact

Office hours: MoWe 11:15 am–12:15 pm; TuTh 1:15 pm–2:15 pm, Zoom Meeting ID: on Canvas.

Teaching assistants: Peter Hu [pth9 at pitt]; Shuyang Cao [shuyang.cao at pitt];

Evan Harris [evh18 at pitt] Office hours on Canvas, under ‘General Resources’.

Course description [updated]

This course is the first half of a two-term algebra-based sequence that presents the fundamentals of classical physics and few elements of modern physics. The most distinctive character of Physics is that a small set of principles allows us to make predictions on a wide range of natural phenomena that happen around us. Even processes inside the human body must obey physical principles, and most medical technology completely relies on Physics-based techniques. The topics that we will discuss in depth in this course include: dimensional analysis, object translations, rotations, and vibrations; simple collisions; fluid statics and flow; heat and temperature concepts; waves.

A primary learning goal is to identify and apply Physics principles in various real-life situations and on occasion, in the context of other disciplines. A secondary goal is the development or refinement of competencies useful for problem solving. Initially, you are expected to be equipped with basic algebra and geometry. Basic trigonometry and vector algebra will be introduced during the term, focusing on their application. Beware that this is a relatively fast paced course.

The course management website is [Canvas](#), which you can access using your Pitt credentials (help desk: 412-624-4357). You are expected to check Canvas at least once a day. You will find videos, study tips, feedback, and grade entries (except for individual homework grades). For the homework, you will need to sign up to [Gradescope](#) (which comes at no cost for Pitt students).

Video minilectures and checkpoints

Before class meetings, you are required to watch a few *video minilectures* (linked from [Canvas](#)) and answer the embedded conceptual questions (*checkpoints*). You will be able to pause, rewind, scan, and replay the videos as many times as you want. You are recommended to *take brief notes* and *reflect* on what you just watched before attempting these checkpoints. Some tips on how to make the best out of the viewership are found at the Modules page on Canvas. You will have a single attempt, but receive a generous 80% partial credit for viewership of the corresponding video (viewership is tracked and logged by Panopto, though solely for our internal records).

The actual purpose of pre-class questions is to prime you for the in-class (and recitation) activities, in which you will be asked to compare, contrast, apply, and combine various concepts. These checkpoints will represent only a first instrument for you to verify your basic understanding of the material – they are *not meant to be representative* of exam questions. Other learning resources will be used for that purpose, such as problems solved in class and collaborative worksheets in recitations.

Is there a textbook?

A complementary resource to my video mini-lectures is the OpenStax *College Physics* electronic book, downloadable (at no cost) from [OpenStax](#). Extra examples and practice problems can be found there. We will cover mainly Chapters 1-17, although the material will not be necessarily presented in the same style as this book. You will not need to purchase the print book.

Class meetings and participation

To join class meetings, please download the Zoom app to your computer or tablet – unless you have already done so. The face time we have together will be mostly devoted to your active learning, after I give a *brief* conceptual review of the main ideas. I will demonstrate or simulate physical processes and elicit discussions about them. Also, I will extensively model how to combine different concepts and train you to effectively check your own work. The goal is to gradually turn you into *independent* problem solvers by means of coaching and timely feedback. I will put emphasis on conceptual relationships and sense making of the equations, which goes well beyond the execution of “cookbook recipes”. This sense-making is paramount to your learning and will be reflected in your exam performance, by design. Any Physics questions I will ask on Zoom will not count toward your grade, but will be extremely useful to check your current understanding of the concepts. To ensure the free and open discussion of ideas, students may *not* independently record classroom lectures without the advance written permission of the instructor. I will routinely post my notes with my annotations, but make the meeting recordings available to you only on demand, in the event you were unable to attend. (If you do attend, I will expect you to be an active participant, and will strive to engage you the entire time.)

Recitations

Our recitations comprise a collaborative worksheet in which you will combine concepts from the previous week and a synchronous quiz, which is *not* a test but rather a formative assessment. Your teaching assistant (Evan, Peter, or Shuyang) will ensure to give you enough feedback on what you have learned up to that point that you should be conceptually equipped for the synchronous quiz. For clarity, recitation is a place for questions about content and problem solving: questions about logistics or schedule should be asked through our [Canvas](#) Discussion tool – and there is a strong chance that another student will be able to answer your question even before a TA does! We *are unable to either process medical excuses or give makeup quizzes*. At the end of this term, I will drop your *two lowest* quiz scores (which may include zero in the case of absences, whether justified or unjustified – that does not actually matter).

Homework [updated]

You will be assigned homework (via *Gradescope*) *twice every week*, unless announced otherwise directly by the instructor. To sign up, use the directions given on Canvas. You are required to register using your full name as it appears on the official class roster, thanks. Duplicate accounts or unauthorized accounts will be automatically removed, and I decline any responsibility for resulting losses of work or credit after such a removal. Homework will count for a significant fraction of your grade.

Homework allows to independently verify your conceptual understanding and practice problem solving. Your collaboration with other classmates is *not* discouraged, but eventually you will need to genuinely know (not just *think* you know) how to set up and solve a problem of the same kind completely on your own. (Copying other students' answers typically results in abysmally low performance on exams.) Multiple resources are available when it comes to homework, and these are posted under the Modules page on Canvas. Due to fast pace of a summer course, extensions will not be possible, and any extension requests will have to be ignored out of sheer necessity. The lowest score will be dropped at the end of the term, to account for the event of one accidentally missed assignment.

Graded assessments

There will be *five learning assessments*, each covering slightly less than three modules of material (dates: all Thursdays, except first week of class). These assessments will contain both conceptual questions and quantitative problems, whose average difficulty will be comparable to the more difficult problems from your homework sets, from your recitation worksheets, and from the numerous in-class examples. The detailed exam format will be explained via Canvas during the (only) check-in day the first Thursday of class. As an instructor, my focus in terms of evaluation will be your conceptual and procedural understanding of the Physics, not merely your sheer knowledge base and/or mathematical prowess. All students are expected to take all assessments, and I will be *unable to offer makeup exams* for obvious logistical reasons (this is a really fast-paced course). There is no deliberately cumulative exam, but to a large extent physics material is inherently cumulative, as will be explained in class (and as you may know). The following policy applies.

Missed exam policy. An unsubmitted assessment (for any reason) will earn a zero. If a *medical emergency* occurs, the student has the obligation to *communicate it via email to the instructor as soon as humanly possible*. In health-related situations, the student *may* be excused from a single exam by sending a signed physician note certifying his/her inability to perform schoolwork, and other kinds of emergencies will be evaluated on a case-by-case basis. If a chronic medical condition applies, the student is expected to have already contacted Disability Services about it, as outlined in the next section. In all the above cases, being excused means that the automatic zero score on the assessment will be dropped, so the midterm exam grade will be determined by the other two exam scores. Under no circumstances of any kind a student can miss more than three exams overall, since that will automatically trigger the issuance of an incomplete grade at my end. If you have questions, please do not hesitate to contact me sooner rather than later.

Self-assessment

In Physics, each new concept builds on earlier ones and this is a relatively fast-paced course, so it is crucial to keep current with the material. Frequently checking one's reasoning is crucial to the development of conceptual understanding and problem solving skills, and in class you will receive many stimuli in those directions. Exploring areas out of one's current comfort zone is a normal part of learning, so it should never be viewed as threatening. Also, your comfort zone can be gradually expanded, because through regular exercise brain can grow, much like a human muscle does through physical workout. Among other things, in the homework system you will find an optional math self-assessment that should help you hear an alarm sound about any lacking prerequisites in time to still comfortably catch up. It is never too late to learn anything, if you put your mind to it. Also we as instructors learn new things nearly every day, so we are metaphorically all on the same boat (in a positive sense!). Please carefully read my study tips on Canvas and reach out to the captain if you have doubts on how to apply them in a way that is effective for you.

An honest self-assessment has numerous advantages. Here are a few. a) you get to *realistically* monitor your progress in the course; b) you are objectively in a better position to discuss with teaching assistants or tutors and get much more from their feedback outside of class; c) you learn to distinguish genuine conceptual issues from mathematical or procedural difficulties, which is extremely helpful for your performance, or should we rather say, our navigation through the material.

Help resources

You are surely not alone in your learning process. Consider all the following help resources.

- Instructor's and teaching assistants's weekly office hours on Zoom, to help you check your conceptual understanding, provide unconditional support, and help determine where you are currently positioned in your ideal 'progress bar' in terms of the learning objectives. Details to appear on Canvas the first day of class.
- Canvas discussion board, for logistics and general study strategy questions.

Students with disabilities

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and Disability Resources and Services no later than two weeks into the semester. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call (412) 648-7890 or send an email to drsrecep@pitt.edu to schedule an appointment. The Disability Resources and Services office is located in 140 William Pitt Union on the Oakland campus.

Please feel free to reach out to me at any time, if you have concerns about our accommodations or potential lack thereof, or any other related questions. No problem.

Academic integrity

All students will be expected to comply with the University of Pittsburgh’s Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the term will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity, publicly available at:

<http://www.provost.pitt.edu/info/acguidelinespdf.pdf>.

For online assessments, every student will be required to sign a honor code before starting the assessment, and to strictly follow all the instructor’s directions. Violations of integrity guidelines *will* result in the opening of an independent verification process, and once confirmed, serious consequences ranging from a zero score on that entire assessment to a failing grade for the course, depending on the type of the offense.

Grade calculation

Your numerical grade will be calculated using the weights shown in the following table. In summary, 63% of your grade comes from individual performance on assessments.

Item in master course gradebook	Weight, %
Pre-class videos viewership (<i>no scores will be dropped</i>)	16%
Recitations (<i>two lowest scores will be dropped</i>)	16%
Homework (<i>lowest score will be dropped</i>)	20%
Synchronous exams (<i>best four out of five scores</i>)	48%
Earned <i>extra credit</i> to be added in % after last exam	(tbd)

To give you a **rough** idea: a numerical score of 93% should be converted to an A; a total score of 83% to a B; a total score of 72% to a C. This rule of thumb may be subject to small adjustments, not to exceed 2% in either direction, and the cutoffs for “+” and “-” grades in each grade band will be determined accordingly. The complete letter grade cutoffs will be posted on Canvas some time after the last assessment. Unless a manual grading error or a spreadsheet miscalculation was made, your final letter grade is **not** subject to appeal.

About policy updates [original]

Updates to any of the information contained in this document will have to be announced directly by me (course instructor) *both in the virtual classroom and via Canvas to be in effect*. I will also have a discussion board reserved for questions about logistics and about policies outlined in the syllabus or (possible, although unlikely) policy updates. In any event, I will work in a way that ensures a general fairness of evaluation in strict adherence to the learning objectives for the course, which are the actual reason you are taking the course. Thanks for reading.