Physics 0476
University of Pittsburgh – Spring 2021

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Where to get help

There are a lot of resources. I recommend that you to find the one that works for you.

Office Hours

All of us listed above will offer a total of about 20+ office hours per week. That's a lot! You are free to visit any of us. After the first week, there will be a spreadsheet on the Shared Box Folder called PHYS0476_OfficeHours.xlsx for the specific hours and locations.

Resource Room

The Department of Physics and Astronomy provides a Resource Room staffed by physics graduate students. It is free. The drop-in hours will be available here (after week 1): http://www.physicsandastronomy.pitt.edu/resource-room

UTA Room

The Department of Physics and Astronomy provides a UTA room staffed by UTAs in introductory physics courses. It is free. The drop-in hours and information are at https://www.physicsandastronomy.pitt.edu/PhysicsUTA

Peer Tutoring

The School of Arts & Sciences Undergraduate Studies offers Peer Tutoring, either by appointment or by drop-in. It is free. Information is available online. https://www.asundergrad.pitt.edu/connected-community/peer-tutoring/

Your own peers

The best teachers may be your own peers in the course. I encourage you to form a study group or a homework group! Sizes between 3-5 are typically best for coordination. I will form some "Default UTA Groups" on Canvas (under PEOPLE tab) just for everyone to has to start with.

Your default UTA

Default UTA Groups will be assigned a UTA to be the leader of the group. If you have any questions or concerns that you may want to ask someone, *please contact them via Canvas email*. They can be your first go-to UTA if you're worried or confused about something.

Calendar (TBC)

Feb 17 (Wed)	Practice exam	available after lecture
Feb 24 (Wed)	Exam 1	available after lecture
Mar 25 (Thu)	Exam 2	available after lecture
Apr 26 – May 1	Final exam week	

Basic course information

Webpage

Canvas for this course can be accessed through your http://my.pitt.edu account.

Required text

Halliday, Resnick & Walker, *Fundamentals of physics*, custom 9th ed. ext., Wiley, 2011. You may be pleased to hear that the original authors David Halliday and Robert Resnick were physics professors at Pitt! Halliday was an undergraduate and received his PhD both at Pitt; Resnick was a Pittsburgh native. This textbook is truly local.

We'll cover Ch. 21-36 + *many additional topics.* It is an Honors course after all. You should get your money's worth. The additional topics will distinguish it from PHYS 0175.

Other books that may be helpful

Young & Freedman, *Sears and Zemansky's university physics*, 13th ed., Pearson, 2014.
Purcell & Morin, *Electricity and magnetism*, 3rd ed., Cambridge, 2013.
Feynman, Leighton & Sands, *The Feynman lectures on physics II*, Addison-Wesley, 1964

University policies

Academic integrity

Students in this course will be expected to comply with the University of Pittsburgh's Policy on Academic Integrity (http://www.provost.pitt.edu/info/ai1.html). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, students may not bring any unauthorized materials to an exam, including programmable calculators and dictionaries.

Disabilities

If you have a disability for which you are or may be requesting an accommodation, please contact both your instructors and Disability Resources and Services (DRS, http://www.studentaffairs.pitt.edu/drswelcome), 140 William Pitt Union, 412-648-7890 (drsrecep@pitt.edu), 412-228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course. **It is the student's responsibility to make arrangements with the instructor prior to the exam.**

Copyright notice

Course materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials. See Library of Congress Copyright Office (http://www.copyright.gov) and the University Copyright Policy (http://www.cfo.pitt.edu/policies/policy/10/10-04-01.html).

Statement on classroom recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor. Such recording properly approved in advance can be used solely for the student's own private use.

How the course is graded? Q&A with Professor Hong.

My experience

Here are aspects that I try to take in to account.

- Try hard during the semester — Students want their efforts during the semester to pay off and not have the final exam determine their grades. After all, the course is not one exam.
- Know stuff at the end — Students feel that it's unfair to get a lower grade if one "aces" the final exam because their grade going into the final exam wasn't so high.
- Curves vs. straight — I don't want to go into the philosophy of this, but students generally want "curved" unless there is a quota on good grades.

Grade categories

To accommodate for these needs, I've come up with the following system where each student sets his/her own curve. Consider the following maximum points one can get from each category.

1. 0.20 | Homework
2. 0.05 | Labs
3. 0.05 | Quizzes
4. 0.05 | Hour exam 1
5. 0.05 | Hour exam 2

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   0.40 | Sub-total that one can get going into the final. I will call this $v_{subtotal}$

We also have the final exam as the last item.

6. 1.00 | Final exam score that one can get in the final exam. I will call this v_{final}.

Grade combination

The total score in the course will add in the following way.

$$v_{total} = (v_{subtotal} + v_{final}) / (1 + v_{subtotal} \bullet v_{final})$$

The v_{total} will correspond to the letter grade in the following table.

Letter	v_{total} lower bound	v_{total} upper bound
A+	Set at my discretion	100%
A	90%	Set at my discretion
A-	87%	89.99%
B+	84%	86.99%
B	81%	83.99%
B-	77%	80.99%
C+	73%	76.99%
C	69%	72.99%
C-	64%	68.99%
D+	58%	63.99%
D	52%	57.99%
D-	46%	51.99%

Features

- ***Come-back kid*** — This scheme allows anyone to "come back" in the final exam. No matter how you did in the course going in to the final exam, you can always get an A+. For any value of $v_{subtotal}$ (say a zero value!) 0.90 in the final exam will get you 0.90 in the total score, because $v_{total} = (0 + v_{final}) / (1 + 0 \bullet v_{final}) = v_{final}$. What you get in the final is your total. Flipping the above table sideways gives you the following:

v_{final}	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
v_{total}	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Grade	F	F	F	F	F	D-	D+	C	B-	A	A+

Say you had 0% prior to the final and 70% on the final. It land you at **C**.

- ***Hard worker*** — Say you tried hard, did well on the homeworks, labs, quizzes, exams (say 0.80) did OK on the final (say 0.70), this sets you up for:

1. 0.8 • 0.20 | Homework
2. 0.8 • 0.05 | Labs
3. 0.8 • 0.05 | Quizzes
4. 0.8 • 0.05 | Hour exam 1
5. 0.8 • 0.05 | Hour exam 2

   0.8 • 0.40 | Sub-total $v_{subtotal} = 0.32$

Then your curve is $v_{total} = (0.32 + v_{final}) / (1 + 0.32 \bullet v_{final})$

Here is how your final exam score then combines. You can fill in intermediate values.

v_{final}	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
v_{total}	32%	41%	49%	57%	63.8%	71%	77.2%	83%	89.2%	95%	100%
Grade	F	F	D-	D	D+	C	B-	B	A-	A	A+

Say you had 80% prior to the final and 70% on the final. It land you at **B**.

- To summarize, each student sets his/her own curve. Please take a look at the Excel spreadsheet I've uploaded online. You can play with it yourself.

Meaning of numbers

- Because of the way $v_{total} = (v_{subtotal} + v_{final}) / (1 + v_{subtotal} \bullet v_{final})$ adds, getting an $v_{subtotal} = v_{final} = 80\%$ across every category will end up as $v_{total} = 89.2\%$ for A- grade. So, if it helps you emotionally in the way you may be used to it, you can think of "80%" scores as really being close to a "90%" at the end of the course. You set your own curve, not anyone else.

What is cheating anyway? Q&A with Professor Hong.

Groups

Suppose you work in a small group. So if you don't get something someone explains it to you. Therefore, your answer is really similar (if not exactly) as that person's. Is this cheating? Usually not, but it could be. If you write down by *copying* the work, then it is cheating.

If that person explains it to you by sketching out the steps on paper and verbally telling you how to get there without spelling it out for you, and you subsequently work it out on paper by yourself, it is not cheating. It's like someone giving you training wheels. Use them, then shed them. Be free.

Solo

Suppose you work alone. So if you don't get something, either you look it up online or you get it wrong. You look it up. Then you accidentally find the problem solved for you step-by-step. Is this cheating? Yes. You should utilize online resources, but not like this.

Personally, I'd not look things up. I would try to struggle to get it myself. Ask someone, ask the TAs, UTAs, me. I find that more I struggle, the more I remember how to do it. When I was in college, a philosophy professor told me never to look anything up. He said I would get into the habit of never coming up with an original idea. That is a scary thought, because it's so easy to say "let's Google it." But you're being trained to solve problems that don't yet exist. Then what? You want to keep your creativity. Don't give that up, even for some points. It's not worth it.

Not only is it just scary, it trains to be unemployable. If something is Googleable, then why would they pay you? In the end, you are employed to solve problems that are not already solved.

I used to take piano lessons as a child. My teacher would say "play this piece five times a day and mark it here when you do." I knew that I can mark five tick marks when I showed up. But I also knew that it is immediately obvious if I didn't actually practice because I wouldn't be able to do it. In this course, the exams and quizzes will verify that you have retained the knowledge.

Example

Suppose you have a study partner. You go to the library and work out the problem together. After you both figure it out, one of you writes the solution on the board to review it. Afterwards, you both copy the solution to turn in.

From the grading perspective, is this cheating? Yes, I think it crosses the line. I want you to recreate the solution yourself using your own notation and own write-up. I suggest sketching out the steps on the board, but fill in the details yourself. Then you can both collaborate but not copy each other's work.

What happens

In one extreme, if something looks funny, I may talk to you about it. It doesn't mean you did anything or that I suspect you of anything. In one exam where students had to come up with the best answer to a problem (the answer was $\sqrt{2}$), four students independently approximated it by 10/7. That was so strange that I talked with each student. They each showed me how they arrived at it and everyone had a unique approach!

In the other extreme, if I find problems uploaded to various internet sources or chatrooms and you get caught, for example, please assume that you will deal with Pitt's Academic Integrity Officer about possible sanctions.