Honors Physics 2024-2025
Expectations and Class Information

Ms. Rachel Dunham
rdunham@polytechnic.org
Office: Poly 205 (upstairs)
Free periods: ACD; G sem2 only

Mr. Richard White
rwhite@polytechnic.org
Office: Poly 201 (downstairs)
Free periods: ACDE, L1, L5

Honors Physics class periods: B (L3) E (L5) F (L1)

About the class:

The most common misconception about Physics (in my experience) is that it's just a bunch of formulas and math. There are, indeed, many formulas and lots of math for certain approaches to physics problems, but the *real* challenge of physics is learning to *think*. Physics is all about taking things you know and see and experience and finding the logic that explains and predicts those behaviors. What makes physics "hard" is that you have to use your brain in different ways than you may be used to, and this can be frustrating – until you accept that it takes practice and creativity, and is emphatically NOT a solo endeavor. Studying physics is a little like playing a sport or studying an instrument: you don't go into a game or concert without having practiced, diligently, a little bit almost every day leading up to it, with the aid of your team/coach/teacher. Your brain is a muscle, and it needs repetition and training just like all the rest of the muscles you use for sports, dance, or music. Like sports, dance, or music, physics is also quite fun! In what other class do you get to play with party poppers, Hot Wheels, robots, and strange gadgets?

All this to say: this class should be interesting, mind-blowing, and (yes) fun. It may not always feel that way, but that's always the overarching goal. Ask (lots and lots of) questions, both in class and out; do a little practice every day instead of cramming for tests; and be curious about what you see both in class and out!

Course requirements:

It is expected that you will attend and participate in all class meetings and lab exercises, as well as complete all work as assigned. You should bring with you to class each day a well-organized notebook, pencils, at least 2 different colored pens, and a scientific calculator (whatever you use in math class is fine). Please make every effort to be in class on time; at the bell for hard starts (e.g. beginning of day, after lunch), and within 3-5 minutes of the bell for soft starts. If, for a soft start, you come in after we start engaging in an activity, please enter quietly and join in without disruption.

Textbook and resources:

This year, we are using an online textbook, College Physics on OpenStax (https://openstax.org/details/books/college-physics). You can access the textbook online, or download a PDF, whichever you prefer. This is a great resource for further reading if you want another explanation of the material or more practice problems; however, there are no officially assigned readings. Homework will generally come from the problems at the end of the chapters, and solutions will be posted separately on MyPoly for you to check your work. *See "homework" section below.*

Two other online resources that may be helpful are: http://hyperphysics.phy-astr.gsu.edu/ and Mr. White's http://www.learnapphysics.com. Obviously, this is not an AP Physics class, but the "Physics 1 and 2" resources on Mr. White's site are good if you want to see the next step up in these concepts.

Homework:

Each night, you will be assigned a small number of problems -- conceptual, calculation, or a mix -- that will give you the opportunity to practice concepts or techniques we've been learning in class. Doing these assignments is critical for building understanding, recall, and problem-solving skills that will benefit you on tests, labs, projects, and generally. Most questions will have provided solutions for you to check your work, which will be part of the assignment. Self-checking and thinking critically about whether your response matches the solution is one of the keys to success in physics, as is consistent practice in between classes. To that end, homework will be included as a small portion of your overall grade. *Here are guidelines for doing homework effectively and for full credit - also posted on MyPoly.*

Each assignment will generally be worth 4 points, and scored as follows:

Score	Criteria
4/4	Homework turned in complete and on-time (e.g. at the start of the next day of class as assigned on MyPoly), with corrections, checkmarks, or questions about the problems written in a different color, as needed.
3/4	Homework turned in late or incomplete, up until the day of the test on that unit.
2/4	Homework turned in after the test on that unit
0/4	Homework never turned in

Labs:

We will do several different kinds of labs in this class, some graded, some ungraded, but all important for your learning experience, development of skills, and general enjoyment. Labs are consistently one of the most fun parts of any science class, and always a highlight for students when they reflect on the year. We will develop different lab skills throughout the year, and not every write-up will require the same information, so please pay attention in class and to each lab assignment as to what is required before, during and after the lab. *Here are the lab guidelines posted on MyPoly that we will go over together.* Labs will be worth different amounts of points depending on the lab, but the grading scheme will be the same for all as shown below:

Score	Criteria
100%	The student demonstrates an excellent understanding of the laboratory exercise. All parts of the lab notebook entry or the lab report are clearly labeled and in the correct order. The data and results tables clearly show correct data, calculations processes, and results. Graphs are appropriately and correctly drawn. The discussion is clear, displays logical reasoning, and correctly identifies and explains potential sources of error. Minor errors in the entry or report, if present, do not detract from overall understanding. Communication is clear and effective. The lab is turned in on time.
85%	The student demonstrates a solid understanding of the laboratory exercise. All parts of the lab notebook entry or the lab report are clearly labeled and in the correct order. The data and results tables show data, calculations processes, and results. Graphs are appropriately and correctly drawn. The discussion is clear, displays logical reasoning, and identifies and explains potential sources of error. Minor errors in the entry or report may be present. Communication is mostly clear and effective. The lab is turned in on time.
70%	The student demonstrates a basic understanding of the laboratory exercise. The student has included most of the parts of the lab notebook entry or the lab report. The data and results tables show data, calculations processes, and results. Graphs are appropriately and correctly drawn. Major errors may be present. Writing may hinder effective communication. The lab is turned in on time.
60%	The student demonstrates a limited understanding of the laboratory exercise. The student has included some of the parts of the lab notebook entry or the lab report. Major errors and misconceptions are present. Writing may hinder effective communication.
50%	Student was present in class for the lab OR reached out to make up the experience BUT did not turn in a write-up within 1 week of the due date
0%	Student was not present in class for the lab, did not reach out to make up the experience, and did not turn in a write-up

Assessments:

Assessments in this class may include traditional pencil-and-paper quizzes or tests, projects, presentations, and data-based (lab) exercises. All will be clearly announced ahead of time in class and posted on MyPoly as well as on the 12th grade Google Test Calendar. "Quizzes" will generally cover around one cycle's worth of material and be around 30 minutes in length, whereas "tests" will cover more material and fill a full period. A unit may end with just a quiz, or a test, or a combination of quiz and lab exercise -- it depends on the unit!

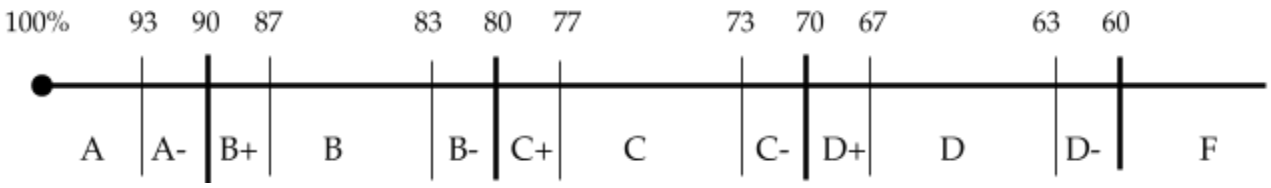
You may have the opportunity throughout the year to re-take a particular assessment and replace your score on that assessment. This is an opportunity to have a second chance in a particular unit doesn't "stick" the first time around, or you have a bad day, or things just don't go as well as you'd like. This will require some legwork on your part: formally requesting the re-take, meeting with your teacher, providing evidence of practice, and accomplishing the re-take within the provided time period(s). We'll talk about all this when the first opportunity comes around, but the way to approach this is NOT to count on it and assume "oh I can just redo it later," but to put forth your best effort on each assignment or assessment, and to take advantage of this opportunity IF it's needed AND you have the bandwidth to do better. Remember that these opportunities will be limited in number and not available for every test.

Grading:

Tests/quizzes and other assessments will make up roughly 60-65% of your overall grade. Labs will be worth roughly 20-25%, and nightly homework 10-15%. These are approximate breakdowns, rather than weighted percentages.

A record of assignment statuses and grades will be kept on MyPoly. If you notice a discrepancy or error on MyPoly, please come talk to your teacher as soon as possible.

Your grade at a marking period or at the end of the course will follow Poly's grading scale:



Late work:

Extensions will only be granted if arranged in advance of the due date - emailing at midnight the night before a lab to ask for an extension is probably not going to fly.

Homework assignments will be due for full credit at the beginning of class on the due date. Homework may be turned in late for partial credit. *See table in "homework" section above.*

Labs will have assigned due-dates (usually within 2-3 classes after collecting the lab data). For full credit, they will also be due at the beginning of the period on the due date. Late labs will receive partial credit, with a 5% per school day deduction up to 1 week, at which point the maximum score will be 60% credit if turned in by the final deadline provided by the instructor.

That being said, this is not engraved upon granite never to be touched. I get that you all have lots on your plate, especially during the first semester of your senior year. Asking you to turn things in on time is not meant to stress you out or feel unfairly rigid; you will always have at least a week's warning for major assignments (e.g. tests, formal lab write-ups) and the calendar will be posted on the class website for you to see what's coming up and therefore plan ahead. These deadlines are meant to get you to think about the way you study, and practice the independence and self-discipline you will need next year and beyond. If you are being conscientious you should be able to adjust your study schedule to accommodate these deadlines.

It's expected that all students will take their tests on the same day during the scheduled period (of course, excused absences due to illness, etc. will gain extensions). However, if there is an unforeseen emergency, PLEASE come talk to me. I am willing to make accommodations if there is a very good reason for doing so, and as long as you don't make a habit of it.

As mentioned above, excused absences will automatically earn extensions on any missed work. However, it's expected that work due during your absence will be turned in in a timely manner upon return to school following the policies in the student handbook.

Absences:

As with any class, attendance is critical to learning the materials and being present for labs, assessments, and collaboration. However, life happens, and there will likely be days you'll have to miss class. Whatever the reason, it is your responsibility to check the calendar and arrange to make up missed work. For excused absences, you will have the same number of days to arrange to make up work missed (e.g. out for 2 days, should arrange make-up work to be due within 2 days of return)

> If you know ahead of time you will miss class (e.g. athletics, college visit, appointment): please check the calendar for what we will be doing during the class(es) you miss, then reach out to your instructor with your plan for how to make it up (e.g. "I plan to email [classmate] for notes, but I see we're doing a lab activity - can I come in during my free period the next day to do the lab?"). Any work due on the first day of your absence should be turned in upon return. You should reach out at least one day before your planned absence.
>
> If you're sick or something comes up last minute:

First, rest and get better! Your health and well-being is always the first priority. When you feel well enough to return to school, you should check the calendar and reach out to your instructor with a plan to start getting caught up and/or a specific request to meet and check in (e.g. "I'll get notes from [classmate] from my absence, but can I come in before school or during C period to talk with you about a plan to catch up?).

Academic honesty:

We will discuss this throughout the year, but before we even get started here is the main gist:

Cheating on homework:

The solutions to homework problems are available online, so "cheating" on homework doesn't really exist (in an academic honesty sort of way). However, the whole idea of these problems is to give you the chance to tackle new problems in a low-risk setting, and train your brain for future problems on tests. Looking at the solution before you've tried the problem to the best of your ability makes any further attempts at the problem totally useless, because then your memory takes over, not the analytic side of your brain. So avoid this temptation, even though there may not be many "points" at stake – there are, later on, on a test when that question arises again and you haven't properly trained your brain to solve it.

***Cheating on labs*:**

Any questions you would feel comfortable asking me (which is something you should do if you get stuck) is totally okay to ask your friend or your parents or whomever. If you are working in a group (e.g. on a lab write-up) and someone has a question or is stuck, it is totally okay to VERBALLY explain or assist that person in reaching a solution. What you SHOULDN'T do is give them your write-up to look at (or, take a look at someone else's write-up) – even if all they do is look at it, and then write from memory, THIS IS STILL CHEATING. It also completely defeats the purpose of learning to tackle a problem, and to think analytically on one's own. You can TALK about a solution as much as possible, but when the pen (or pencil) hits the paper, the words and solution are completely yours.

Obviously, in a lab situation, certain aspects will have to be the same between lab partners: it's totally okay to make your own copy of hand-collected data or computer-generated data or graphs for each person to have their own record. It's also fine to compare calculated results with your partner (again, verbally) to double check your work. Any and all analysis and explanation, however, must be your own work.

If you're unsure about whether or not it's okay to do something, simply come check with me – better to ask first than fall down a slippery slope.

Cheating on quizzes or tests:

Usually the most clear-cut of the bunch, it is obviously not okay for one student to gain an unfair advantage over their classmates. In a test or quiz situation:

- ❖ It is unacceptable to look at another student's paper, or allow another student to look at your own paper, during a test, quiz, or other individual assessment.
- ❖ It is unacceptable to discuss a test, quiz, or assessment with any student who has not yet taken it but you have, **OR** to ask other students for information about a test, quiz, or assessment that they have taken but you have not. (Honestly, just don't talk about it until it's handed back).
- ❖ It is unacceptable to help another student study for a test, quiz, or assessment which you have taken but they have not.

There are many reasons why people are tempted to cheat, but the consequences can be dire. These consequences can range, in the academic sphere, from a 0 on the assignment to a failing grade in the course to the rescinding of a college acceptance to expulsion from an institution. Academic dishonesty is a serious topic in all academic institutions, and it's just plain wrong. As Mr. Fletcher puts it:

> When just one student cheats, he or she generates a cancerous environment in a school where the simple minded can rationalize doing the same and the honest become angrier and more frustrated as injustices build.
> Cheating is monumentally selfish.
> Cheating is destructive not only to the cheat but also to those on the periphery.
> Cheating is not acceptable. *Do not do it!*

Use of AI (e.g. ChatGPT, etc):

Exciting new developments in AI-Machine Learning have resulted in the widespread availability of neural networks that can solve problems for you, write paragraphs or essays, etc. in response to your prompts. These tools are fascinating and deserve to be experimented with! Although this software may serve useful purposes in some contexts, **these tools should not be used for generating work you do for this class**. Submitting work as your own that has been generated by one of these systems is not permitted, and will be treated as a case of academic dishonesty.

If you have any questions about this policy, the instructor is happy to discuss them with you.

Parting Shot:

After all that doom and gloom, let me remind you what I said at the start: I am on your team to make this year interesting, educational, and fun. I want to be for you what my Poly teachers were for me: inspiring, supportive, and totally crazy about science. So here goes!

I leave you with one of my favorite comics, mixing two of my favorite things: music and physics.


I DREAMED A DREAM OF TIME-INDEPENDENT SCHRÖDINGER EQUATIONS GONE BYYY...
DO YOU HEAR THE DIPOLE SING, SINGING A SONG OF MAGNET MEN...
EMPTY CHARTTTS OF EMPTY DATAAA...
ON MY OHMS, PRETENNNDING V = IR...
WHO AM I?..... CALIFORNIUM TWO FIVE ONNNNNNNNNE!
"LES PHYSZ"?
AAAA! I THOUGHT NO ONE WAS HOME!
www.foxtrot.com twitter: @billamend
©2013 Bill Amend / Dist. by Universal Uclick