

CLASS STUFF AND HELPFUL HINTS
for success, happiness, and even survival in
Advanced Placement Physics 'C': Mr. Forrest 2022/2023

Welcome to Room117 – Where excellence happens every day!

This is the traditional rules, procedures, guidelines and hints sheet. Read it, know it, and love it! This course is probably quite different than any other course you have taken, *even if you had A.P. Physics I.*

WHAT YOU WILL NEED (in addition to pencil, paper, textbook, etc.):

- * 1 calculator (graphing is preferred)
- * A **NEW** composition notebook for HW (problem notebook)
- * Additional materials for projects as needed

NOTE: Within a few days, each of you will have your own mail slot. You may put your materials in this, but I cannot guarantee their security. I'll provide each student with a folder for their lab work. *Taking the lab folder to college can be very helpful!*

What you can expect from this class

MUTUAL RESPECT, EFFORT AND RISK-TAKING

Respect what each student and teacher brings to the table - You're top-notch students and I'd like to think I'm a pretty good teacher. We are absolutely in this together. I've got a lot of expertise in physics, but as students you may have more expertise in some things like using your graphing calculators, using certain mathematical applications such as matrices, computer coding, etc. We really need to have a class that respects each other's expertise and allows that to be shared so we ALL learn a lot. I know I'm going to learn a ton about some things as the year goes on, and I'm really looking forward to that.

EFFORT is more important than intellect in almost everything you do until (if and when you reach) graduate school. If you are a smart student who's been able to be lazy, you may not like this class. As someone who's taught AP Physics for a long time, I can tell you that (a) students' performance on the AP exam, (b) success in college or the military, and (c) success and persistence in life outside of your education ALL depend far more on your **effort** than the ability you were born with. I know this from my teaching experience and from working in a private research lab for over twenty years. This should all should make sense, since pretty much anyone you'll compete against from here on out will be smart. Remember, IQ is not a fixed thing: you can make yourself smarter and a better thinker by working hard at challenging tasks. But, you can also become less capable over time by being lazy. I guarantee you I will give you my very best effort this year so that you can be successful, and I hope you return that effort to our class. We'll have more in-depth discussions about this.

Taking academic risks: In order to grow, it's important that we are all able to take risks and learn to grow from them, not be beat down. This is just as true for me as it is for you. If I feel a part of my instruction hasn't been effective, I'm going to change it since I think it's important to observe and respond to the needs of students each year. I truly think if we have the respect and effort pieces, that risk-taking is something people will feel safe to do in class. And that can be very, very cool.

“ True camaraderie comes from collaborative efforts on common problems; it is the strongest kind of professional glue – a source of professional pride and satisfaction ” –Malcolm Wells

FAQ's:

What's different in 2022/23?

There are a **ton** of new resources for teachers and students of AP classes over the past few years. While my students have been pretty successful in AP Physics C without these, I think there are great resources which we'll learn about throughout the year. Some things (like Pivot Interactives and PhET simulations) will help us along the way, and others may not help as much. While AP Classroom is available (and necessary for you to sign up for the AP exams) so far, I haven't been impressed with it very much. *One other big change is science classes have 13 minutes less per class this year, so that's going to have some other side effects.*

Do I have to take my GIANT book home?

No. While the electronic version of the book isn't available since we have an older book, we have a small enough class where you should be able to check out TWO books, one for in class and one for at home, keeping in mind you are responsible for both. We may end up using the *Mastering Physics* website, which does have a slightly different (newer) e-version of our book available.

So how do we use the calculus in physics?

With thought. My goal is to have you understand the physics first and foremost, and then apply certain parts of calculus to allow you to expand that understanding to new situations. For example, whereas in the past we might have treated a projectile while ignoring air resistance, now we could look at how air resistance will continually affect the acceleration as an object falls, which involves a differential equation. After taking an A.P. Physics C workshop a few years ago, and attending an American Association of Physics Teachers conference this summer, I realized that you can still do very well if your algebra and reasoning skills are strong. The workshop let me know that you CAN pass the test (and there's even a chance at getting a '5') without knowing calculus. *However, a little calculus will go a long way to helping you score even better.*

So, what about the AP test(s)?

AP Physics 'C' is split into two parts and there are two tests. One is Mechanics and the other is Electricity and Magnetism (E&M). With changes in the AP Physics 1 curriculum getting rid of electricity in the curriculum and with us having shorter class times this year, most students have no background in E&M as compared to before 2019. Therefore, my recommendation is to have you sign up for both AP Classrooms so you have access to the materials, but I think the pace of our instruction should be to have you very well prepared for the Mechanics test, and not take the E&M test but still learn enough E&M to help you succeed in college. We'll talk about this at the beginning of the school year.

You're in a college level physics course designed for scientists and engineers, so what does that mean?

- It means that you will need to develop a support network of people to work with in class and figure out quite a bit on your own.
- It means that there is no way (and no reason why) I will go over most of the practice problems in class. As a teacher, I should only be needed for the exceptionally difficult problems. However, I'm always available for 1-on-1 tutoring if you'd like more, and after school or E/I review sessions are encouraged!
- It means you should focus on understanding rather than memorizing (usually). There is **no way** you can memorize all the information we will cover in this course, but if you understand something, you can apply it to a new situation.
- It means that we start based on some things you learned in your first physics class and then go much deeper. You will be able to 'catch your breath' in some areas that you mastered well last year, but you may struggle in some other areas. We will cover several new areas, however, such as electromagnetism and fields, along with rotational mechanics.

GRADING - The grading in this class is based on tests and reading quizzes, labs, projects, online homework, and some homework checks. The main part of your grade will be based on tests, just like in college. The grade scale is the same as that used for all courses and is indicated in your student handbook. I seldom give extra credit, but tests likely will be adjusted from their raw score if you are fully active in the 'post-test analysis' process and correct your homework before tests, to be discussed at a later time. Last year I really didn't offer retake tests in AP Physics C because it wasn't helpful to most students – the goal is to be prepared the first time. That's part of the reason I curve the test (with conditions) because I want you to have an experience similar to college – and they do not offer retakes. With that being said, the class is structured for people who give effort to succeed. If a student is really putting forth effort and still struggling, that means we'll need to conference to help that student figure out how to be more successful.

In general, the course will be weighted approximately as follows:

- * Tests/quizzes ~ 60-70% of the grade
- * Labs, HW and projects ~ 25-30% of the grade
- * Participation, involvement, attitude, etc. ~ 5-10%
- * Homework - SEE EXPLANATION BELOW

NOTE: The weighting may differ during the last 9 weeks. Unlike my 1st year course, I don't use Standards Based Grading, but the results are similar.

Homework consists of problems assigned to help with your understanding of the subject. After the first few chapters (which will be due at the beginning of class on the assigned day) your homework may be due online via a system I'll introduce to you in class (*The Expert TA*). I've set certain parameters for the ExpertTA scoring, but I may end up altering these as the year proceeds. I expect you to bring your problem notebook to class with your work shown, but the homework grade will also be done electronically. You have multiple attempts for each problem, and hints are available. For book HW, each chapter will have Conceptual Questions (either at the end of the chapter or on a handout I give you) that will be due and discussed a few days before the Problems in class. Your HW grade for each chapter will be a combination of the Conceptual Questions and Problems (either online or from the back of the chapter). I'll also post my solutions online as a PDF and YouTube video so by testing time you will be expected to have corrected all incorrect answers in order to get a curve. Give all problems a try, even if you don't think you "get" it at first. Please do your HW on one side of the pages and leave space for corrections on the other side, marking which side is which. Make sure to correct problems that you miss in a different color of ink or pencil! Book HW is checked for EFFORT and DETAIL SHOWN, not for correctness.

NOTE for 2022/2023: *ExpertTA* answers will be posted for you on their website after the assignment is due.

ASSIGNMENTS AND MAKE-UP WORK- GET THINGS DONE WHEN THEY'RE DUE! I will collect assignments at the beginning of the period on the due date; alternatively, if you are electronically submitting something you will need to email it or share it with me by the beginning of class on the day it's due. I don't accept late work (even later in the same period) except under extremely dire circumstances or if you have a written accommodation for this. If you forget or lose an assignment, make sure you understand the material so you can have a chance to do well when it is covered on a test. If you are absent on the date an assignment is given, you will be given the same number of days to make it up as you were absent; again, as per the student handbook. However, if you are absent on the date an assignment is DUE, it will be due the first day you return to school. Befitting an AP course, it is your responsibility to hand in assignments and get assignments (including notes from other students) when you are absent. I WILL NOT TRACK YOU DOWN, BUT I WILL TRY TO PUT ANY HANDOUTS IN YOUR MAIL SLOT. I also will post assignments and a syllabus on Google Classroom

You will have reading assignments that have to be done before we begin to discuss topics – I will try to give a 'chapter preview' before you read to let you know what I think are key concepts. Pre-reading gives the information sufficient "soaking" time, so when we discuss it, you will at least be able to recognize key words and big ideas from the subject. Labs will be done in class with partners, but lab reports and questions are to be individually completed. This is not to say that you cannot discuss the questions with your lab mates, but answers should be in your own words. Normally I will ask you to turn in your labs with all people in a lab group having their labs paper-clipped together; this will quickly allow me to see if you have done your own work. A general AP rule is for every hour in class, you spend an hour out of class working on things.

Physics is truly a team effort, and if you need extra help, talk with your friendly teacher, look over your '5 Steps to a 5' guide (to be provided soon), take advantage AP Classroom resources, look at sites such as Khan Academy or Flipping Physics, do extra problems in your book, or study with classmates such as **Cooper Stotridge or Will Meyer**, who can always use more friends (JK!). (I'll pass around a list for us to make sure our "cell phone and e-mail tree" of your fellow AP Physics C students is correct and that you want to be included.)

TESTS - I will test in **more depth** in this class than in other physics classes, and probably on the scale of about every 4 weeks. Also, pre-quizzes may be given over reading assignments, and at times I will expect an outline or notes to be done as part of the reading quiz grade. *Keep these notes for review before the AP exam, and for a Chapter Review Guide we compile in the 4th grading period!* These quizzes are designed to see if you read -- NOT if you fully understood -- the assignment. I like our AP text - use it!

Tests will always be cumulative in nature, although recent material may be stressed more heavily. You will be allowed to use your formula sheet on free response tests, however it's best if you don't have to rely on it too much! Knowing the formulas in your head really helps you understand them! Also, prior to about five years ago students have not been allowed to use the formula sheet on the multiple-choice parts of AP exams, so you really shouldn't need it on that part of your tests. Hey, I wonder if anybody's read this far? If so, don't you think I should be awarded 10% of what you make your first four years after college? So, we'll say you'll do that when you sign the end of the document. After all, we're both trying to make you successful. My bet is nobody will read this part. We shall see.

Make-ups for tests and quizzes. If you miss a reading quiz, I'll average your other scores for the quarter and put that in for the grade. I also reserve the right to give you a different reading quiz if you miss more than one. If you are unable to take a test by the time we start to go over it (normally a 1-day window) you'll be given a different test than everyone else, and to be honest it may not be written as well – I think taking the original test will really benefit you more.

Helpful hints:

1) You will have a **5 Steps to a 5** workbook that can help clarify a concept in only a few pages. Use this as a resource, but not as your textbook. You may be allowed to use this on certain tests. We will have some assignments out of this during the year.

2) Most of us know each other. *This can be both good and bad.* We need to be careful not to become so familiar and informal with each other that we get sidetracked. My job here is to allow you to be successful both now and in the future. That means we need to kind of feel our way along this year. I don't want to go too fast, but I also want you to gain as much as possible from the course. Last year, my AP C class worked really well together!

3) Honest to goodness, **get a study group.** This is the most important thing you can do to be successful. I really want to develop those skills to help you. I mean really, if the only important thing you get out of this class is just the physics, I haven't done my job. I will **encourage** this by requiring you to send visual evidence of working with other students at some points during the year.

Our Google Classroom code to join is: **v6in2ij**
– please go ahead and join that ASAP!



Sign up for important updates from Mr. Forrest.

Get information for **Pickerington High School North** right on your phone—not on handouts.


Pick a way to receive messages for **AP Physics C 22-23**:

A If you have a smartphone, get push notifications.

On your iPhone or Android phone, open your web browser and go to the following link:

rmd.at/9980a

Follow the instructions to sign up for Remind. You'll be prompted to download the mobile app.




B If you don't have a smartphone, get text notifications.

Text the message **@9980a** to the number **81010**.

If you're having trouble with **81010**, try texting **@9980a** to **(571) 364-6571**.

* Standard text message rates apply.



Don't have a mobile phone? Go to rmd.at/9980a on a desktop computer to sign up for email notifications.

Forrest contact information:

E-mail: doug_forrest@plsd.us (A GOOD WAY FOR PARENTS TO CONTACT ME!)

My Cell Phone: 614-946-5075 (texting is a good way for students to contact me)

School phone: 614-830-2700, (Voicemail # 2758 but I don't check it too often ☺)

My website is at: <http://www.pickphysics.com>

Other Information



Really, if you haven't kept your parents up doing AP Physics C at some point, I'll be surprised ☺

I am truly looking forward to A.P. Physics C this year. I hope you are vocal, work well together, aren't afraid to be wrong at times, and have a lot of fun. By signing below, I pledge to work hard ALL year for you to help you be successful. I'm often here late in the day, and I'm willing to offer extra help even after athletic or band practice. Just let me know.

Teacher signature

I'd like you to sign below as a pledge to give a strong effort in class, a way of stating that you've read this document, and so that I know you are aware that I'd like you to come in for extra help throughout the year if you are struggling.

Student signature and date