

Course Overview - A. P. Physics C (Mods 7-9, 10:36-11:38 AM)
2020-2021

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Course Overview

Welcome to AP Physics C: a calculus-based course that's equivalent to the courses a student would take in university physics, including students majoring in pre-med and engineering. While the physics content is the primary focus, using calculus as a tool to apply physics in new ways will be emphasized as the year goes on. If you are just taking calculus this year, don't worry! There are three or four major applications we use over and over again, and by the time of the AP exam you'll be good at those.

Normally, the instruction in the course is designed for students to take both the AP Physics C: Mechanics exam, and the AP Physics C: Electricity in Magnetism exam. While we'll discuss this in the first week of class, in this crazy year of COVID, I am heavily leaning to only focusing on the Mechanics exam, while adding E&M instruction if time allows.

Course Objectives

There's a huge document listing the course objectives, and I'll share that with you here. [2020-2021 AP Physics C Essential Outcomes \(College Board\).pdf](#)

Logistics for the hybrid model

Sunday evening	Assignments/agenda for the week will be posted.
Monday, Tuesday	Cohort A will be in class Cohort B will be working on online assignments
Wednesday	Virtual (online assignments) for all students, and PM time to Google Meet with groups or individuals. Today's online assignments should be completed today, unless otherwise noted
Tuesday, Thursday, Friday	Cohort B will be in class Cohort A will be working on online assignments

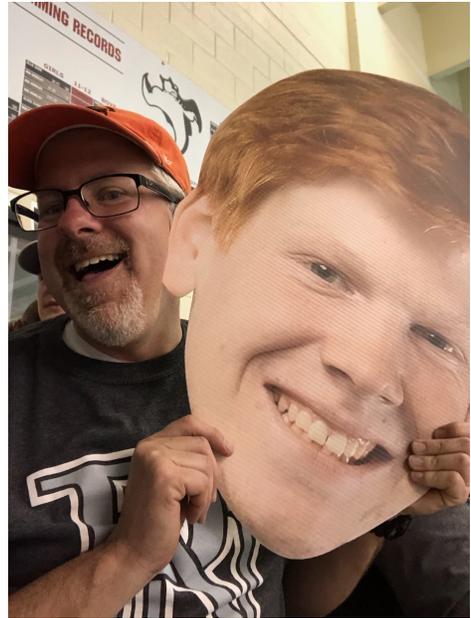
- **Virtual assignments (M, T or Th, F) → Due Monday following the week assigned at 11:59 PM**
- **In person assignments → Due dates may vary based on cohort**
- **Wednesday virtual assignments → Should be completed on Wednesday if possible, if not by the following Monday at 11:59 PM**

While *online* assignments for each cohort will be posted at the beginning of each week and due the following Monday, I strongly urge you to attempt them on the day they are posted. That way, if you run into difficulties there's still time to get help from me or a classmate.

Teacher Bio

Hi, I'm Doug Forrest! This is my 27th year teaching in Pickerington and I'm excited to have you in AP Physics C class this year. I really enjoy getting to know my students as individuals and still communicate with students from every year that I've taught. If any of you have Mr. Oakes for math - I had him as a freshman my very first year teaching! The photo to the right is of me holding up the FatHead of a student last year when I went to his senior night swim meet - he did NOT expect that! I love to be able to attend events and know what your interests are, although I know things may be limited with respect to this for this school year. I'll ask you about this in a survey later. Click on the video link here to learn a bit more about me!

[[AP Physics C welcome video!](#)]



Course Communication	
Class announcements and weekly agenda	I'll post these in our Google Classroom stream, and also on the 'Physics' page of my website, which is a public site that parents can view. I'll also send out Remind messages. To sign up for the Remind account (parents are welcome to do this as well as students) see the document on my website[https://www.pickphysics.com/ap-physics-c.html] under the 'Files' page, go to the link here, https://www.remind.com/join/9980a , or text the number @9980a to the number 81010. The best way to join is to go to the document from my website, follow instructions, and have notifications push to your phone.
Email/Personal Messages	<p>There are two really good ways to reach me.</p> <ul style="list-style-type: none">• The first is via the Remind App, with a link to the same form as above. This is an application you can put on your phone, which I encourage, and/or your ChromeBook. The nice thing about Remind is that I can communicate with entire classes of students, smaller groups, or with you as an individual. You can also send me messages through here, which I normally check until up to at least 10 PM on school nights. Also, all phone numbers remain anonymous with Remind, even if you have it push to your phone as a text message.• The other good way to reach me is through email. My email is doug_forrest@plsd.us, and I check it several times a day including at the start of the school day. I normally don't check email in the evenings, so if you wish to contact me then, use Remind. <p>If you leave a private message for me in Google Classroom, I'll get that,</p>

	<p>but it's not as quick as either Remind or email.</p> <p><u>Note:</u> It may take up to 24 hours to receive a reply during the week and 48 hours on the weekend, although normally I'm a lot quicker than that, especially with Remind. So try not to wait until the last minute to send a message if you need help. Early in the year, I'll pass around a sheet for students to list their cell #'s for those wanting to participate in a "phone tree". Oftentimes, students really benefit from contacting their peers outside of class! For those who choose to share #'s, I won't publish this online anywhere, it'll just be a sheet I hand out to you. An alternative to this might be a GroupMe for the course, arranged by students.</p>
General Questions	<p>If you have a question about the course or an assignment, I encourage you to post your question in the Google Classroom "stream." The stream is visible to the entire class community, so I encourage you to both ask and answer questions there. If a classmate asks a question and you know the answer, please jump in and help them out! If we have a "phone tree", you can also use that to text them, but you won't get the benefit of the entire class seeing the message.</p> <p>Also, if we go entirely virtual, please use our synchronous (everyone in a Google Meet at the same time) "office hours" as a place to ask questions. Since students are expected to be there, it can be a great place to ask general questions.</p>
Online Discussions	<p>Online discussions are an important opportunity for you to interact with and learn from your peers - normally small (lab) group discussions, presenting whiteboards, and whole class discussions are a primary way science classes learn, and I want to try and model that as much as possible for us during remote instruction. The class will regularly engage in conversations about the course content and lab simulations as well as any hands-on activities. You will receive credit for your participation in these academic discussions, both in synchronous meetings, online asynchronous discussions, and in class. Often we'll share things out digitally on a combined Docs or Slides document, where each person or group can post in a place everybody can see.</p> <p>For discussion prompts, you are expected to post thoughtful, respectful, and well-written responses to the discussion questions that are posted in the Google Classroom Stream, and reply thoughtfully to at least two other students per discussion.</p>

Participation Policy

You'll need to be present in all synchronous meetings if we have those, or let me know via message why you aren't there - preferably before the meeting - so I can note your attendance. I expect you to ask questions during these, and hope you can also offer your own insights and experiences. You'll be expected to participate by attempting all assigned work as well, and to let me know if you have problems. Often I'll ask a few short questions in a Google Form to check for your understanding or if you have questions. It'll also be **critical** for you to discuss online simulations and activities we do, often as a small group and then later as a part of the class. Science is truly a collaborative process, and we need to use each other to help us develop a deeper

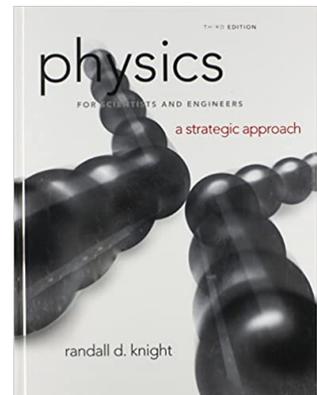
understanding. I care far less about your results than I do about how well you can analyze those results and discuss possible errors and uncertainties with your classmates.

At the end of each quarter, I'll assign you a Performance Rubric where you evaluate your participation throughout the quarter and I give specific feedback to you. Part of that Rubric will also be for you to evaluate my participation, feedback and performance. The final scores for these will be part of your grade because your involvement and discussion are things I evaluate for physics understanding.

Required Texts, Materials, and Online Accounts

We'll be using a lot of online resources this year, but these are the things you'll need to start off. I'll get you another document about other applications, websites, and accounts in a little while, but these are critical to start. We'll end up getting signed up for these (for the ones that need an account) over the first week or two of class. All of them are things I've tried over the years and these are the best resources for our online class this year.

- Our primary reading source will be the textbook ***Physics for Scientists and Engineers: A Strategic Approach, 3rd edition***. This is a high level textbook, and often if you're asked to read a chapter it will take awhile. Also, reading the textbook only once is NOT good for developing a depth of understanding. Often it's useful to do an initial reading and take notes, then be an active part of an in person or online discussion, then reread parts of the chapter as you go through and solve problems and have other questions. We should be able to get you access to the book online as an eText through a site called *Mastering Physics*, but this is always a bit of a challenge to do. Once I get this set up successfully, I'll get you registration instructions.



- Your code to join our Google Classroom is [**qtrwvve**] and a link to join is here: [Link to join AP C Google Classroom](#)
- You'll need to sign up for a Remind account. Here's a link to PDF of that: [Link to Remind instructions](#)
- You'll need your ChromeBook and something to record timing data, such as the stopwatch on your phone. There's also online stopwatches if you don't have a phone with one. You should have somewhere organized to write down and record your work, as often in physics it's easier to write some things down by hand and take a picture of your work than typing out your work. I recommend a composition book similar to the picture at right, and if you can find one with quad-ruled (boxes) it makes it easy to use for hand-drawn graphs.
- I'll provide you a hard copy of the AP Physics formula sheet which you can use on all tests and quizzes. [A PDF of the formula sheet is here.](#)



- A few weeks into the school year, you'll get a hard copy of "5 Steps to a 5" that will be a great resource preparing for the AP exam - we'll have some assignments from here throughout the year.
- You'll need to sign up for [AP Classroom](#) for AP Physics, which I'll get you a join code for within the first few weeks. We'll use this for some practice problems and for 'Personal Progress Checks' throughout the year. It's also a place where the College Board can communicate with you as your AP testing approaches.

Schedule - Based on the hybrid model we are using to start the school year

Cohort A (we need a nickname!): In person instruction on Monday and Tuesday, virtual instruction Wednesday, Thursday, and Friday.

Cohort B (we need another nickname!): Virtual instruction Monday, Tuesday, and Wednesday. In person instruction on Thursday, and Friday.

- **Virtual assignments (M, T or Th, F) → Due Monday following the week assigned at 11:59 PM, but you should start working on them on or before the day they are assigned in the syllabus**
- **In person assignments → Due dates may vary based on cohort**
- **Wednesday virtual assignments → Should be completed on Wednesday if possible, if not by the following Monday at 11:59 PM**
- **Office hours are from 12:00 - 1:00 PM on Wednesdays, although you are free to contact me through Remind or email at many other times**

Each week or two (probably every two weeks), I'll provide you with a syllabus for upcoming assignments. I'll also share a [Course and Exam Description](#) with you from the College Board, and my course of study for each content topic. However to start, here's a preview of the Mechanics portion of the course. Each of these units will have a series of standards, learning objectives, and activities. After Mechanics, we'll use what time we have to prepare for the AP exam and to study electricity, magnetism, and circuits as time allows.

Unit 0 - Foundational Understanding, Graphing, Estimation, Mathematical Models

Unit 1 - Kinematics 1-D and 2-D

Unit 2 - Newton's Laws of Motion

Unit 3 - Systems of Particles and Linear Momentum

Unit 4 - Work, Energy and Power

Unit 5 - Gravitation

Unit 6 - Rotation - Torque, Rotational Inertia, and Angular Momentum

Unit 7 - Oscillations

Grading Policy

The grading in this class has traditionally been 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 online student handbook. This year it's less likely that we'll be able to do hands-on projects (this makes me sad 😞), and a number of our labs may be simulations or labs where you collect data from videos. 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 complete the Personal Progress Checks assigned from AP Classroom. 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, behavior, attitude, etc. ~ 5-10%
- * Homework - SEE EXPLANATION BELOW

Homework consists of problems assigned to help with your understanding of the subject. After the first chapter (which will be due at the beginning of class on the assigned day, or to be submitted online by a specified time) your homework will be a mix of textbook problems and those from an online 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. I'll make sure that we have a tutorial assignment for you, and will make a video showing a bit about how to submit answers. 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 Screencast 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. I'll post my solutions and a screencast of how i solve problems for all textbook assignments, and after the due date/time, ExpertTA will have solutions posted as well. ExpertTA homework will be for a grade, while book work and conceptual questions will be scored as a ✓+, ✓, or ✓- depending on the quality and detail (but NOT depending on correctness) of your work. At the end of the quarter I'll look at all your homework scores and use that to adjust your grade up to reflect the effort you put in - I'll discuss this a bit more in person.

Attendance Policy

As we start with the hybrid model, students who are having virtual days will need to log in to Infinite Campus each day (maybe for each period?). If students haven't done their work, teachers can then go back (within seven days) and mark that student as absent. Since most virtual assignments will be due Mondays, that's when I'll check to make sure you completed things, and that's when I will change your attendance if those assignments are not completed.

For our in-class days, please be here each day you are healthy since we have so little time together on the hybrid model. If you miss class, I'll try and have as much as possible available both as a hands-on and online activity, although in-class discussion isn't something you can really make up. I will try to be here every day as well!

Student and Teacher Code of Conduct

Remote instruction generally isn't easy for students, and we need to really help each other out. It's going to be important to have proper conduct when we're interacting online, and to be respectful, kind and understanding of each other, just like we need to be in class. You'll actually be scored on this to an extent each quarter in the Performance Rubric mentioned earlier. If students act inappropriately online, I'll try to speak with the student first, contact a parent, and if needed contact an administrator. Normally I don't have a problem with this, but I do want to be clear that we need to be professional and courteous when interacting with each other - that goes for me too!

It's a lot easier for students to plagiarize (copy) others' work with remote instruction, but it's absolutely not correct to take credit for another's work. My job as a teacher is to help you learn and understand the world around you through physics, and I can't do that if you misrepresent what you know. Early in the year we'll have some discussion about Academic Integrity (or, if you're a pessimist, Academic Misconduct). It's really important, and often students going to college get into trouble by not understanding that. As I said, we'll definitely spend time on this topic early in the year.

If we have synchronous (all at the same time) online Google Meets, I'll need you to be there at that time unless you contact me ahead of time. Normally it's nice if we can show our faces, but I'm not sure if that should be a requirement or not? Maybe that's one of our first discussion points.

As a teacher, I need to do my best to help you instructionally, and while I'm not available 24 hours a day, I will respond as quickly as I reasonably can to your questions and I'll try and be flexible when it comes to online instruction - we ALL have a lot to learn. In class, I'll try and make it worth your while to come to school and have interactive activities, labs, and discussions. Of course I also want to keep you safe. We all have different amounts of anxiety when it comes to interacting with others during the time of COVID-19, and if for any reason you think I am not doing enough to keep you safe (either by my actions or those of your classmates) please let me know! Again, trying to balance safety with in-person instruction is something new to all of us, and I'm open to suggestions and criticism.

Final thoughts

I'm so happy to have you in physics class! Really. I've missed teaching in person, and I've missed the interactions with students. I really want physics to be a positive experience for you and for me. I work really hard, and I'm open to learning new things. One of the reasons I love teaching is that my students teach me so much, especially about technology. For us to have the positive experience I know we can, I really need your help to be active and involved in class as much as possible with remote instruction and during the days

we are in class. I need you to give me feedback to help me improve how I do my job so I can help you learn better. Most of all I need you to give remote or hybrid instruction a shot and to keep a positive outlook. We can do this! I promise I'll do my best to give each of you feedback and try my best to make you feel welcome in class. And a little humor never hurts either! Now let's get started!

