

## Frequently Asked Questions about AP Physics C

**NOTE:** Before reading these FRQs, be sure to thoroughly read the course description as it provides the essentials about the course.

### **Is the course interactive and/or are there set times for class?**

Like most APhomeschool courses, there is no specific time for lectures, or meeting. There is a secure web board for all members of the class (and parents) to post all kinds of comments, questions, interesting fun facts or links, or even non-physics related communication between members of the class. I make myself available as much as humanly possible – via the web board, via email, and via online chat or telephone if necessary. I try to be immediately responsive to questions/concerns as much as I possibly can be because I know that when a student has a question, they want/need an answer right away, not days later.

### **Are there video lectures?**

While video lectures are available on the web for certain topics and I make reference to some as optional tools for learning the material, I find video lectures to be tremendously time consuming. The complexity of the concepts combined with the variety of the mathematical approaches to applying those concepts to problem solving is just too broad in scope to efficiently learn via video lecture. Video lectures are good for getting another perspective on a topic that a student may be having difficulty with, but honestly, the book (Giancoli) is outstanding and is one of the best if not the most highly recommended text for AP Physics C. The book is our main source of information and my job is to provide guidance, filter out the superfluous material, and answer questions, provide clarification, and provide feedback. I do however regularly reference “enrichment” material for students directly pertaining topics being covered.

### **How is the course graded?**

I’ve got to be honest with you, I’m an easy grader. I grade homework for completeness (I post the answers before the student has to submit them so they can check and correct their answers a priori); Labs reports are not fancy formal reports, but data oriented focused on comparing results to theoretical expectations. Grade points are also earned by completing Multiple Choice Questions with a student being able to continue answering questions until the required number of points are achieved.

Why am I an easy grader? These courses are definitely not easy. These are college level Physics courses covering a vast amount of conceptually and mathematically complex material. Some parents/students sign up for the course thinking they are taking a high school physics course. This is an Advanced Placement course with students often earning college credit for achieving a 3, 4, or 5 on the AP Exam in May. A very difficult part of the course is that a student must keep up with the pace. I work very hard to focus the student on the essentials of each topic, but even so, for a student to be successful in this online class they must be sufficiently self-motivated and be fluent in mathematics in order to focus on the Physics behind the math.

### **How much emphasis is put on the Labs?**

The labs are actual, physical labs. In all honesty, the concepts "taught" in a lab are easily taught via other avenues (virtual labs, books, videos, etc). However, as I wrote in the course description:

"Laboratories are important to not only help students understand the topics being considered, but also to expose the student to the non-idealized situations of "real" life. Lab experiments will allow you to compare results with idealized or expected outcomes and creatively interpret and present your results."

The AP exam has specific essay questions reflecting laboratory set-up, procedures, result presentation, etc. Collegeboard, the administrators of the AP Exam, emphasize labs because (and here I totally agree) the concepts of science are developed and accepted as "truth" based upon experimentation. Having the bright young students of this course exposed to this underlying foundational concept is important for their scientific long term development, creativity, and growth.

The labs are straightforward; most (and there will be at most 10) should not take much time. Labs cover such topics as swinging pendulums, measuring voltage and current in a small electrical circuit, and experiments involving pulleys, friction, and springs. As I stated, the labs are not what I consider a physics learning tool, but are really more of an exposure to the "real-life" environment of data collection and then relating the data to theoretical calculations that we've learned in the course. I don't want students getting bogged down with tremendous formality and "official" lab reports (even though they will submit their findings to me for my review). I'd much rather have students learning the material then making pretty graphs, etc. Pre-formatted lab reports in MS Word and/or pdf format are often provided which allow the student to simply insert their data into a table and provide answers to questions instead of getting caught up with formatting issues.

### **How well have your students performed on the AP Exam?**

This will be my fourth year teaching AP Physics C but I also have 4 years of experience teaching the recently eliminated AP Physics B course. With annual enrollment of between 20 and 30 students, my AP Physics C students have averaged between 4.1 and 4.6 on the Physics C Mechanics Exam and between 4.2 and 4.5 on the Physics C E&M Exam every year. My earlier 4 years teaching the discontinued AP Physics B, the average score on the AP Physics B Exam was slightly above a 4. However, I should point out that every year I always lose a couple of students who drop the class or fall way behind in the work. I work very hard to make the class fun, interactive, but yet focused on the essentials. Even so, some students are overwhelmed by the pace or the complexity of the material. This year I have a very large class of Mechanics and E&M students and while the results for this year's class won't be available until late in the summer, I believe this year's students will also do extremely well on the exam.

### **How are the AP Physics C courses different from the new AP Physics 1 and AP Physics 2 courses?**

Physics C courses are calculus based physics classes that are each equivalent to a semester of college level physics for engineers and physicists. The Physics C courses culminate with two (2) 1.5 hour AP

Exams in May. Physics 1 and Physics 2 are non-calculus, conceptual physics courses for general studies students that cover similar, but not identical, material as the Physics C courses. The Physics 1 and 2 courses each culminate with 3 hour AP Exams in May.

I hope this has answered many of your questions about AP Physics C. If you have addition questions, please email me at: [jlantot@chicagobooth.edu](mailto:jlantot@chicagobooth.edu)

Thank you.  
Jeff Lanctot