

AP Physics C Syllabus

Philosophy

In AP physics C we will be studying several of the basic ideas of mechanics. You will study things like the laws of motion, the laws of conservation, and a lot of relationships (equations) that reflect those laws. However, it isn't enough to know these things, we have to be able to apply them to a variety of situations. This application can be a hard thing to communicate as a teacher and a frustrating thing to learn as a student because there are so many different ways to apply a relationship to so many situations. To make an analogy, your martial arts instructor can teach you some nice punches and kicks and throws, but it's hard to teach you exactly what to do every time someone approaches you with a fight. Every fight is different. The general approach is to make you fight and give you pointers along the way. This means making mistakes and, as any student of martial arts knows, getting bruised. And in those bruises we learn what to do and what not to do. So in this class I will be throwing a lot of situations at you in the form of physics problems, labs, and just general discussion. It will be your task to fit the physical relationships you learn to all of those situations so that you can get a better understanding of how those physical relationships work. What you are about to do is hard. In your math classes you learned the vocabulary and grammar of a language, now we are going to that country where the language is spoken. If you are determined, then you will not only take from this class some fundamental physical laws, but you will also have a better ability to problem solve in any situation. That is the best thing about physics. It can train us to take a seemingly complex situation and boil it down to its 'simpler' parts. This skill is rare in any discipline, and if you can master even a small part of it, you are already ahead of the game.

Supplies

- pencils and erasers (no pens please, they are unforgiving)
- paper, graph paper
- scientific calculator
- binder (for your own organizational benefit)
- composition book for lab journal

Homework

Many of the homework assignments consist of four problems on average. Most of the problems were taken from the following book:

Halliday, Resnick, & Walker. 2003. Fundamentals of Physics. 6th Ed. Hoboken, NJ: John Wiley & Sons

A few assignments over calculus come from the following calculus book:

Ellis & Gulick. 1991. Calculus: One and Several Variables. Orlando, FL: Harcourt Brace Jovanovich, Inc

Some of the problems come from released AP exams.

And still other problems will come from the mind of Mr. Betzen (me).

After giving an introduction to the relationships we will be using for a particular section, we will begin working through these problems. We will try to get through the explanation of the problems in class but most of the time we will have to finish up during a tutoring session.

Every time we meet, except lab or test days, there will be another homework assignment even though we may not cover new material. In those cases that we don't cover new material the homework is just more problems over the same material as the last homework

The problems in the homework are much more elaborate than the problems from pre-AP physics. They generally require multiple steps and the use of some math that you might have to dig up out of some long forgotten neural pathway in your brain. You have to recall geometry, algebra, pre-calculus and calculus. You may also have to look up information (e.g. the mass of Earth). Remember, though, that either during class or during tutoring we will go over these problems.

Homework Quizzes

Every set of problems that I give you will have a quiz the next day. The quiz is a problem that is taken directly from the homework over that topic, so if you've been paying attention you have already seen the problem and you know how to do it.

In my mind there is no reason you should get anything less than 100 % on the quizzes, but I've been wrong before. I suggest that you study the homework solutions even after I have gone over them. This will reinforce these things in your brain and almost guarantee that you get a 100 % on the quiz.

Exams

At the end of every six weeks, when we finish a unit, there will be an exam over that unit. The exam will be made up of 20-30 multiple choice problems taken directly from previous AP exams. You will only have 30-45 minutes to complete the exam because the time frame must be realistic with respect to the actual AP exam, in which you are going to be doing 35 problems in 45 minutes. These exams are a way of testing your understanding and also a way of you getting into the fast paced style of the actual exam.

I will grade it using the AP style of grading. Every one you answer correctly is worth 1 point. Every one you answer incorrectly subtracts 1/4 point and everyone you leave blank is worth 0 points. The total number of points you earn will be divided by the number of questions and this will be your percentage grade.

On the plus side, the test is curved. I will be using the square root curve on all the tests. That is I will take the square root of the raw grade and multiply it by 10. In other words, if you get 50% correct, then you have earned a passing grade.

Because I'm such a nice guy, every test has a makeup. I will allow you to come in and correct the test. However, you will only get .5 points back for each corrected item. This does not guarantee you a passing grade if you have failed the exam miserably. There will be two

scheduled times when you can come in and make up an exam. If you miss both of the scheduled times, tough.

Laboratory

I will be doing my darndest to make the labs a learning experience. They are too often just a series of steps that have to be performed and an outcome that must occur. But in reality, science is never like this. The labs we do will be exploratory and pretty much self guided. Many times I will give you some equipment and ask you to find a relationship between two things. Other times I will give you a setup and ask you to produce a certain event using what you know about the physics of the setup. I will never give you list of steps. You have to figure out what your procedure will be.

During these labs it is best that you take detailed notes of what you do, what you observe, and any best practices I give you along the way. Those notes will be put in your lab notebook (a composition book), always kept in the classroom, and used them to answer some questions on the lab quiz the next day so take good ones.

Grades and Other Miscellaneous Items

HW – 10%
Quiz – 30%
Lab – 30%
SW Test – 30%

If all of your homework with regard to a certain exam has a perfect score then you will be able to raise your quiz grades up to the grade you got on your corrected test. If you do not have a perfect score on your homework then you cannot raise your quiz grades up to anything.

If you are absent for one or more class periods it is up to you to keep up with the class. On the day you return you must be ready to take or turn in whatever quiz or test or assignment there may be. There will be no one standing outside while the rest of the class takes a quiz or test. Any quizzes or labs or tests you miss because of an absence must be made up before or after school during tutoring.

Tutoring

A-Days before School
8:00AM – 8:45AM

Thursdays after School
4:20 PM – 5:30 PM

A Side Note

If you make a 69 for your semester average, I will **not** change it to a 70.

Check out my website.

<http://www.myteacherpages.com/webpages/MBetzen/>