AP PHYSICS 1 – CHINO HIGH SCHOOL
2014-2015
Instructor: Mr. Fallon

Course Synopsis

Physics is a fascinating subject. Much of what you know will be confirmed and built upon. Much of what you know will be proven wrong. This course will stretch your brain… in a good way. By the time you're through with this course you will have discovered the truth behind a variety of common misconceptions.

This AP class is a college level course. We will be working out of a college level text. To prepare you for the AP Physics 1 Exam on Wednesday May 6, 2015, topics that will be presented in this year-long course may include: Newtonian Mechanics, Fluid Mechanics and Thermal Physics, Electricity and Magnetism, Waves and Optics, and Atomic and Nuclear Physics.

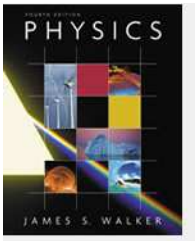
Required Materials

Pen
#2 Pencil
Paper
Calculator *
Graph Paper
Ruler (cm scale)
Set of colored pencils containing red, orange, yellow, green, and blue
Highlighter

* Scientific calculators will be more than adequate for this class. That said, there are TI-83 graphing calculators available for you to check out in the library if you wish to do so. Because both scientific and graphing calculators (without QWERTY – i.e., typewriter – keyboards) are permitted on the free-response potion (Section II) of the AP exam, I will permit the use of graphing calculators in class if you would like to use them.

Required Text

Physics (4th Edition; AP Edition) by James Walker. 2009 (ISBN: 0131536311)



Commitment

AP Physics is a difficult course. Because of the amount of material we need to cover, this course will advance at a very fast pace. It may require 8 to 10 hours a week of time outside of class. Here are my expectations for an A student:

- You read the chapter
- As you read the chapter you try each example problem. You should be able to solve the problem on your own before going on to the next problem. You should do this for each part of the chapter we are covering.
- You should go through your lecture notes, recopying them if necessary, until you understand everything that was presented in lecture and can do the problems that were done in class on your own.
- You should do all of the assigned homework problems.
- You should get together with other students to discuss and work on the problems.
- When you are done with the homework, you should be able to answer any of the questions or do any of the problems assigned on your own, from the beginning.
- You should ask questions during class, lunchtime, and after school. You should be an engaged and active student.
- You should try to understand what you are doing in lab while you are doing it. Your answers to questions for lab should be well thought through.
- Your written work should be complete, easy to follow, and neat.

If you do all of the above, you should end up with a good to excellent grade in the class. If you spend less time, or do less work than the above, you should expect that your grade will be less than excellent.

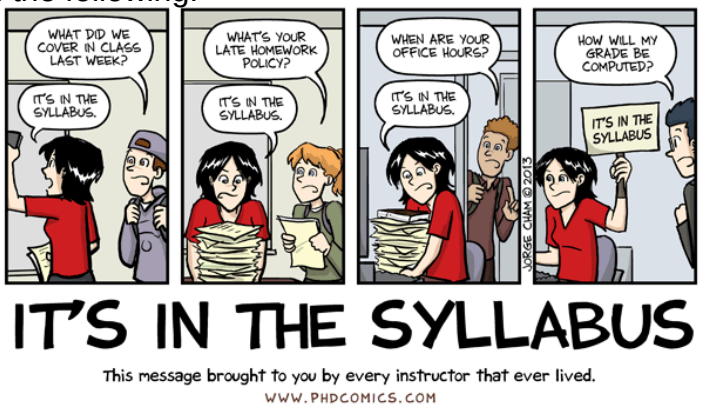
Group Work

You will be working in labs and groups in this class. Working well in groups is one of the keys to success in this class. For your group to get all the correct answers, every group member must share their ideas. Therefore you must respect each other's input and be able to discuss ideas and the validity of those ideas. You must never criticize or make fun of the shared ideas because even weird or incorrect ideas can lead to the truth. You can't take out your bad days on your group members. Cooperation and teamwork are very important.

Grading Policy

Your course grade will be (tentatively) based on the following:

1.	Tests ……	25%
2.	Quizzes……	15%
3.	Labs and in-class activities…….	20%
4.	Homework……	15%
5.	Participation……	5%
6.	Final……	20%
Total		100%



Final Grade will be based on this breakdown: **A** = 100%-90%; **B** = 89%-80%; **C** = 79%-70%; **D** = 69%-60%; **F** = 59% or below.

Participation: In any class, it is very important that you keep focused. Therefore, these points are earned for active participation in class. This includes but is not limited to: attentiveness, asking questions, sharing ideas with partners in groups, cooperating in lab activities, note-

taking, and attendance. Sleeping, unexcused absences, disruptions, or other activities that detract from your ability to learn the subject will adversely affect the participation grade. Remember, active participation helps you in the long run.

There is a maximum of a one-week time limit on make-up work. When you return from an excused absence it is your responsibility to ask about the missed assignments. Please do not take up class time. See me before school, after school, or at lunch if you have questions about back work. You may also find out from one of your classmates.

It will be very difficult to catch up if you fall behind in this class. Therefore, late homework will be accepted only up to one day after the given due date for half credit.

Disclaimer: Grading policy and schedule are subject to change based on class and scheduling needs. Students will be informed of any changes in advance.

Integrity

Integrity is of the utmost importance, personally and intellectually. Honesty is the foundation of all intellectual pursuits. At the very least, what is graded must represent the work done by the student and indicate the level of that student's achievement. Cheating and plagiarism undermine these goals. Cheating is a voluntary act for which there may be reasons, but for which there is no acceptable excuse. "Cheating" includes, but is not limited to:

- Receiving or knowingly supplying unauthorized information
- Changing an answer after work has been graded and presenting it as improperly graded
- Using unauthorized materials or sources
- Plagiarism – copying someone else's work or letting them copy off you. This includes homework, labs, quizzes, and exams.

Working together on homework means discussing the ideas and questions together, but that ***what you turn in must represent your own understanding, expressed in your own words.*** The ultimate decision as to whether or not something has been copied lies with the instructor. If you are caught cheating, you will receive a "zero" on the item. There will be zero tolerance on this policy.

Topics

To give you a feel for the types of things we will come across in our studies:

- You will learn how to describe and predict motion of objects and how to cause those motions. Because this includes just about any sport you can think of, *this class will make you a better athlete*.
- You will find out why your coaches tell you it's better to "follow through" when you hit a ball.
- You will understand why sweat cools you off and why blankets keep you warm.
- You will know just how cold anything could possibly be.
- You will learn about a directionality in nature regarding disorderliness, what some call "The Arrow of Time", but all physicists call it "entropy".
- You will learn why it takes so much longer for oil spills to spread than it takes for the waves from the spill to reach the shore.
- You will learn how to *darken* the wall by shining light on it (Young's double-slit experiment).
- You will find out why radio waves are more like light than like sound.
- You will know what is going on in electric wires.

- You will learn about real-life force fields.
- You will be able to explain why a balloon rubbed against your hair sticks to the wall the same way a magnet sticks to your refrigerator.
- Can glass break with sound? You won't *have* to ask the Mythbusters!
- Ever notice how some people's eyes look big in their eyeglasses and some are just the opposite? You'll find out why.
- You will discover why everything is blurry underwater. Would the same be true for a sea lion out of water? You'll be able to answer this authoritatively.

<u>A few actual questions you may answer from the text:</u>

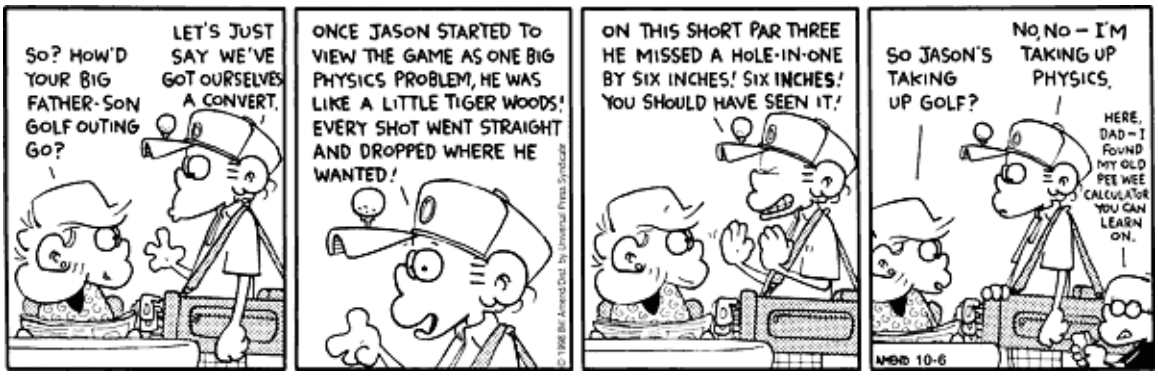
- What is the minimum height necessary to create a supersonic waterfall?
- Calculate how many reps you need to do in lifting a given weight a given distance to burn off the calories gained by eating half a candy bar.
- How close to a current-carrying wire (current given) can a credit card be held without damaging its magnetic strip? (as tested in Mythbusters)
- Explain why the "invisible man" would be unable to see.
- Explain why red colors fade more than blue colors on posters exposed to the sun.

<u>Paraphrased Testimonials</u>:

- I'm glad I took AP Physics: I got the highest grade in my first Physics class in college!
- Physics class literally saved my life: I just barely avoided an accident with a freight truck that suddenly stopped on the freeway by "pumping" my brakes the way we discussed in the friction lesson and so I've survived to problem-solve another day!
- My son likes Physics class. After his car accident, he told us he was *glad* that his car was smashed in because it increased the time of the collision so the forces would be smaller…
- Physics class changed my life. I'll never see another superhero movie in the same way!
- What's happening to me?! I went paintballing and all I could think of was *Physics*!!

<u>End-of-Year Anonymous Comments</u>:

- AP Physics taught me a better work ethic. [so taking the class makes you a better student!]
- "It was super-enlightening and fun"
- "I really liked this course because it gives a unique experience of struggling through so much, with the result of actually learning something that can be related to real life. ☺"
- "The course is definitely the most interesting I have ever taken and you cover the material extremely well, especially given the time constraints."
- "I liked it. I learned so much this year. Thanks, Mr. Fallon! ☺"
- "Truly an amazing experience… The class itself couldn't be better."
- "I want to take it again! :D!"



Classroom Rules of Conduct

1. **Mutual Respect**: I strive to treat all students with the high degree of respect you all deserve. I ask that you extend that respect to all of your classmates and return the courtesy to the instructor as well. Among other things, be careful not to interrupt others. Success depends on working together and on being able to express and discuss your ideas in a safe and nurturing environment. Take care of each other!
2. **Safety**: To avoid injury, we must maintain a safe classroom and lab environment. We will *observe all lab safety rules*, walk instead of running, be careful with lab equipment, and always maintain presence of mind when in the lab. Please ask the professor before attempting something you are unsure about in any way.
3. **Interruptions**: Positive behavior is expected. *Be considerate*. *Avoid distractions and disturbances* to be sure we give everyone the chance to learn. These include walking around, sharpening pencils during lecture, and grooming in class. *The room must be quiet enough to hear my voice*. Listen to explanations so they don't have to be repeated. If in doubt, raise your hand.
    a. Rule of Thumb: If it distracts the instructor or other students, don't do it.
4. **Clean Up**: We share workstations with other classes. Therefore, we will need to keep them clean, just as we depend on the other classes to keep our workstations clean for us. *Be sure that everything is put away* where it goes at the end of each lab. Be gracious enough to *put any garbage into the garbage can*. Be careful not to leave spilled or damaged materials out. Let the professor know right away if that is the case.
5. **Academic Privacy**: As a student, your grades are confidential. You are entitled to keep your grades to yourself if you do not feel comfortable letting others know. If you are asked about your grades, you may feel like you have to tell people. Please refrain from asking others about their grades to extend your classmates that courtesy.

Note: School policies will be enforced. Please: no gum chewing in class and no cell phones.

Student Name (Please Print): _____Period_____

Student Signature: _____ Date: _____

Parent Signature: _____ Date: _____

Daytime Phone #: _____ E-mail: _____