**AP Physics I – Syllabus Fall 2017 \_\_\_\_\_\_\_ Mrs. Susan Ryan**

**About the AP Physics I Course and Exam:**

This course is Algebra-based – you need to know how to solve algebra equations well, you must be able to calculate and understand the meaning of the slope and area of a graph, you must be able to use basic trig functions (SOHCAHTOA). This course mirrors an introductory level 1st semester university physics course. The topics include kinematics, forces, gravitation, impulse-momentum, energy, rotation, electricity, mechanical and sound waves, and simple harmonic motion. The course is designed to be a first-time introduction to physics, no prior course in physics is needed.

The focus of the AP test is not numbers and equations. You may use a calculator and an equation sheet, but these will not be very helpful because far more explanations, reasoning and verbal responses are required than calculations and numerical answers.

Hands-on, inquiry base investigations will also be included to discover principles and strengthen understanding. We will also practice how to set-up an experiment to verify calculations.

This course will require multiple representations of physics concepts; this means you must explain physics with words, equations, diagrams, and numbers.

**Text:** None – I will be providing websites that are far more useful than reading a textbook.

**Additional Instructional Resources:** 5 Steps to a 5 – AP Physics I: Algebra-Based 2017, by Greg Jacobs (Highly Recommended). This will help you throughout the course as well as be a great review for the AP Exam.

**Outline of Topics**

I. Mechanics

A. Kinematics (3 weeks)

B. Newton’s Laws of Motion (3 weeks)

C. Work, Energy, Power, and Momentum (3 ½ weeks)

D. Gravity Circular Motion, Torque, Rotational Momentum (3 ½ weeks)

II. Electricity

A. Electrostatics and Electric Circuits (2 weeks)

III. Waves

A. Harmonic Motion and Sound Waves (2 weeks)

**Grading Policy:** The following Category Weights are used to calculate a student’s numerical average.

Tests – 50% Quizzes – 15% Labs – 25% Final – 10%

**Late Work:** Late homework will be given a 50% after 1 day and then is not accepted because I will make the answers available. Class assignments missed due to an absence must be made up promptly.

**Homework:**

Homework does not count as part of your grade per se however it does several things for you:

1. Helps you learn the material!
2. It is your “ticket” to being able to do test corrections.

**Extra Help:**

I am available each morning starting at 7:30, no appointment is necessary. Study groups have also proven to be very successful.

**Test Corrections:**

I give AP level tests which means they are HARD so that you will be ready for the AP exam when it comes. However, to make up for this I allow test corrections to be made and the chance to earn back up to 50% of the points you missed. HOWEVER, there are requirements for you to do test corrections that I have hinted at already. First, you must complete the homework. If you do 50% of the homework, you will only earn back 50% of the possible points (25% overall). Second, is that the amount of points you earn back will be based on the grade that you get. If you get a 70 or above, you will get 50% of points you missed back, if you get between 60 and 70, you will get 45% of the points you missed back, between a 50 and 60, 40% of the points back and if you get below a 50, you can only get 35% of the points you missed back. This means that you must do all you can during the unit in order to do well on the test including homework, coming in for help, and working in study groups with other students. These methods all work best if you do them throughout the unit, not on the day before the test.

**Attendance:**

Teacher student interaction is vital to success. If a student is absent for any reason, it is the students responsibility to inquire about missed assignments.

**Cell Phones:**

There are times when students are permitted to access their cell phones for internet research, calculators, compasses, applets, etc. Other than that, if cell phones are a distraction, I will ask that they be put away.

**Cheating and Plagiarism:**

Cheating or plagiarism of any kind is not tolerated. A lot of collaboration will take place in class and at home but I expect each person in the group to be contributing, not just copying someone else’s work. The student that cheats or plagiarizes will receive a zero for the assignment or test.

**The AP exam:**

The AP exam will be a 3 hour exam. There are 50 multiple choice questions that you have 1½ hours to complete (about 2 minutes per question) and constitute 50% of your grade. There is no penalty for guessing. There are 5 free response questions that have multiple parts to them and will require justification for each answer. You also have 1 ½ hrs for this section and it constitutes 50% of the grade. There will be 2 long 12-point questions and 3 shorter 7-point questions so you will also have about 2 minutes per point on this section. One of the long free response questions will be posed in a laboratory setting, asking for descriptions of experiments and analyses of data. You will be able to use a calculator and an equation sheet but they will not be a huge help to you. By the time you take the test, you will understand relationships well enough to not need the equation sheet and there will only be about 3 questions where a calculator will be needed. Historically, it has taken about 60 to 65 percent to earn a 5 and about 50 percent to earn a 4. I will model the tests during the semester on the AP test so you should be well prepared when it comes.

**What I Really Think:**

AP Physics 1 is a hard, college level course in terms of pace and rigor. Many students with an excellent academic history will initially struggle in the course as they adjust and learn to think critically and develop problem solving strategies for complex problems. However, this task is doable. Please be patient and understanding with yourself. I encourage you to form small study groups and to come see me early in the mornings for extra help (I am available starting at 7:30 each morning). With consistent effort, you will succeed and take many valuable academic skills away with you. You need to raise your hand in class, ask questions, discuss problems with each other at lunch, etc.

In closing, I LOVE teaching and I LOVE physics and I want you to enjoy this taking this class as much as I enjoy teaching it.

Please sign below to acknowledge that you have read and understood the above letter. And also provide emails and phone numbers where you can be contacted.

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