AP PHYSICS 1

The AP College Board has designed the AP Physics 1 course as an equivalent to an algebra-based college-level physics class. Students are expected to demonstrate learning through the creation, interpretation, and analysis of data. You will be assessed through the production of your written work, tasks, laboratory notebook summaries, oral presentations, tests, and quizzes. At the end of the course, students will take the AP Physics 1 Exam, which will test student knowledge of both the conceptual and mathematical formulations and reasoning of the requisite concepts.

AP classes are taught as college courses—not just college-*level* courses. This means that:

- I will do as much as I can to help you learn, but you and you alone are responsible for learning and understanding everything covered in class.
- I will give you assignments and fair warning about due dates, but I will not chase after you. If you are absent and you need to turn in an assignment late, YOU need to remember to show it to me; do not assume I will ask you for it.
- If you're having trouble with something, YOU need to be proactive about learning it, either by coming in for help after school, consulting with your classmates, or by getting outside help from somewhere else. This expectation is effective IMMEDIATELY, starting with this summer assignment. Remember—YOUR job is to succeed; MY job is to do everything in my power to *help* you be successful. I can do my job only to the extent that you do yours.

This may prove to be one of the most challenging courses you will take in high school. It will at times be a fast moving course that will challenge even the brightest student. There will be occasions which will test your patience and perseverance. Those are the moments in which true learning will occur. DO NOT GIVE UP!

THE AP EXAM: The 3 hour test format is as follows:

Section 1 (90 minutes):

Multiple Choice 50% of Exam Score

- 50 Questions
  - -- Discrete items
  - -- Items in sets
  - -- Multi-mark items (2 correct options)

Section 2 (90minutes):

Free Response 50% of Exam Score

- Experimental Design (1 question)
- Quantitative/Qualitative Translation (1question)
- Short Answer (3 questions)

TEXTBOOK: *Knight Jones Field College Physics: A Strategic Approach*
ONLINE TEXTBOOK (optional): *Physics AP Edition --Openstax.org*
RECOMMENDED to help you succeed

- **AP EXAM REVIEW BOOK** for additional assistance with exam prep. There are multiple books available. I have a copy of **5 Steps to a 5** if you would like to check it out before purchasing.
- *Cartoon Guide to Physics* by Larry Gonick and Art Huffman. This book is an easy read and it provides excellent visual explanations of all of the topics in AP Physics.

Materials needed for class:

- **Scientific calculator.** The required calculator for your math class will be adequate.
- **BINDER** with dividers for organizing all loose materials.
- pens/pencils
- Laboratory Notebook **(bound composition book - with graph paper recommended)**

GRADING WEIGHTS

Unit Tests, Quizzes: 60%	Labs, Individual lab summaries: 30%	Homework, Classwork: 10%

Units of Study (brief)

Unit 1: **Kinematics**

- *Constant Velocity; Uniform Acceleration; Projectile Motion*
- *Text Reading: Chapter 1 (sections 1 through 5); Chapter 2 (sec. 1 through 8); chapter 3 (sec. 1 through 7)*
- *Openstax Physics: Sections 2.1 - 2.8, 3.1 - 3.5*

Unit 2: **Dynamics**

- *Interactions; Forces; Newton's First Law, Newton's Second Law, Newton's 3rd Law*
- *Text Reading: Chapter 4 (sec. 1 through 7); Chapter 5 (sec. 1 through 8)*
- *Openstax Physics: Sections 4.1 - 4.8, 5.1*

Unit 3: **Circular Motion and Gravitation (***independent study***)**

- *Circular motion; Gravitation*
- *Text Reading: Chapter 6*
- *Openstax Physics: Sections 6.1 - 6.3, 6.5*

Unit 4: **Work, Energy, Power**

- *Work; Energy and Energy Transfer; Conservation of Energy; Power*
- *Text Reading: Chapter 10 (sec. 1 through 6, and 8)*
- *Openstax Physics: Sections 7.1 - 7.6*

Unit 5: **Momentum**

- *Impulse and Momentum; Conservation of Momentum; system center of mass*
- *Text Reading: Chapter 9 (sec. 1 through 7)*
- *Openstax Physics: Sections 8.1 - 8.6*

Unit 6: **Simple Harmonic Motion,**

- *Simple Harmonic Motion; Spring-Mass Systems; Simple Pendulums*
- *Text Reading: Chapter 14 (sec. 1 through 6),*
- *Openstax Physics: Sections 16.1 - 16.7*

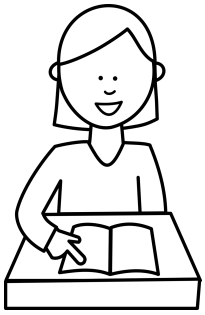
Unit 7: **Rotational Motion**

- *Tangential vs translational vs rotational kinematics; Rotational Dynamics, Rotational Kinetic Energy; Conservation of Angular Momentum*
- *Text Reading: Chapter 7 (sec. 1 through 7), Chapter 9 (sec. 7)*
- *Openstax Physics: Sections 9.1 - 9.5, 10.1 - 10.7*

Exam Review:

- Preparation for AP Physics 1 Exam

AP PHYSICS 1 - Student Expectations



A. General Classroom Expectations

1. Assignments may or may not be collected for a grade.
    a. Individual Lab Summaries - should be the student's own writing (see below about Honor)
2. **Tests –** Will be written in a format similar to the AP exam. You are expected to take tests on the day they are scheduled even if you were absent for any review that may occur.
3. **We will utilize Google Classroom**
4. Class will move faster than you will want it to at times.
    a. Time is a precious commodity. It may feel like there is plenty of time before the AP exam. Every year students beg for more time spent on units they may be struggling with, and then panic when the exam is near and there is little time for any review.

B. General Student Behavior Expectations

1. Be on TIME.
2. Bring the following to class every day:
    a. Binder, writing utensils, calculator
3. **Show Work – For Credit,** or provide explanations (if written) in your response to questions (assignments, quizzes and tests).
4. **Absences —** you are responsible for finding out what was missed.
    a. Check Google Classroom! Ask a friend!
    b. **To make up a quiz or test your absence must be excused.**
5. **Use class time productively -** Wasting class time provided for physics discussion/assignments gives the impression that
    a. You value other classes over AP Physics
    b. You are unable/unwilling to forget about your extracurricular life for the brief class time we meet.
    c. You do not value the opportunity provided to learn
5. Conduct laboratory investigations responsibly and safely.
6. Clean up your work area at the end of class. Leave it cleaner than when class started.
7. **PHONES**: There will be times during labs when the use of phones may be permitted (timers, slow motion video analysis, measuring inclines, etc). Any use outside of the lab is not allowed.

C. INTEGRITY/HONOR

Although science, by its very nature, is a collaborative exercise, your name on a test, quiz, or assignment to be turned in for a grade is an honor pledge, indicating that these assessments are your own work.

1. You will collaborate with your classmates during laboratory exercises and class assignments. **"Collaboration" does not mean "copying."**
2. ***At no time, whether in a lab or on collaborative homework, is simply copying another student's work acceptable.*** Laboratory data may only be shared with students who actively participated in collecting that data.

OBEY THE FIVE-FOOT RULE ENSURE Your work is as authentic as it can be.

The Five-Foot Rule

1. Help help each other - but do not allow someone else to copy your work to "look at later".
    a. You may even verbally guide a friend step-by-step through their solution to a problem.
    b. A friend may, in your presence, look briefly at your work to start himself in the right direction, but no one should ever be using another student's written solution as a detailed reference.
2. When you are actually writing something to be turned in, you must be located at least 5 feet from any other student.
    a. When doing homework - sit well apart while writing.
    b. Sit close to have a conversation/discussion, then separate yourselves to write.

If you have any questions about appropriate behavior in this class relative to the Honor System, please ask.