

# Ocean View Christian Academy

## AP<sup>®</sup> Physics 1 SCI1200

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**Room:** 201

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**Textbook:** *College Physics* by Serway & Vuille, 11<sup>th</sup> Edition

### I. Basic Course Information

#### Course Philosophy

Science is the study of God's creation and how it works. By exploring the work of God, students can see the divine order of creation. Also, it is vital that our students explore this subject because science remains the yardstick by which an innovative nation progresses. God has created an orderly world. And thereby, order and reason govern our study of science.

#### Course Description

AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of Physics through inquiry-based investigations as they explore topics such as Newtonian mechanics, dynamics, work, energy, mechanical waves, and introductory circuits.

#### Course Goal

The goal of this course is plain and simple – get a 3 or higher on the AP Exam in May. Accomplishing this goal will require students to step away from rote memorization as the main source of learning and begin learning to grasp broad concepts and apply them to an array of scenarios. Students will learn how to ask testable questions, develop a hypothesis, design experiments to test the hypothesis, compile data, analyze the data, and draw conclusions to an experiment.

#### Course Materials

- Mechanical pencils (please, no pens)
- Notebook reserved for AP Physics
- Binder reserved for AP Physics
- TI 84, TI 84+ or TI 89 Titanium graphing calculator (not optional)

#### About Advanced Placement (AP<sup>®</sup>)

AP<sup>®</sup> is a nation-wide program operated by the College Board (which also administers the SAT exam) and has been in existence for over 50 years. One of the many functions of an AP<sup>®</sup> course is to prepare students for the AP Exam given May each year in various subject areas. Although the course of study is well-described, the exam itself is prepared by a testing service in New Jersey and kept secret from students and teachers until it is actually given. Exams are graded on a scale of 1 to 5; 5 being the highest and 1 the lowest. Students who score 3 or above are considered to have “passed” the exam, and can receive credit from most colleges in the United States. Students who pass the exam will receive credit for freshman coursework in that particular subject area upon entering college.

### [About the AP® Physics 1 Course](#)

Since this is a college level course taught in high school, it is very demanding, both in time and effort required. Much of the work involves mathematics and students are required to be enrolled in or have taken Algebra II prior to enrolling in this course. Homework is assigned each day through the first three quarters. The final quarter before the AP® Exam will be used for review. The amount of work outside of class depends upon the student and his/her background; however, students should be prepared to spend around 30-45 minutes each night after school on just their AP® Physics homework. Those students who are heavily involved in after school activities and/or jobs will have to learn to budget their time very carefully.

### [Regarding the AP® Exam](#)

This deadline to register for 2021 AP Exams is November 13, 2020 and the cost to take the exam is \$95. The AP Physics 1 Exam will take place on Wednesday, May 5 at 12:00 PM. **Students enrolling in this course are expected to take the AP Exam in May.** Exam scores are generally available the last week of July.

## II. Course Outline

	<b>Unit Name</b>	<b>Time Allotted</b>	<b>Summary of Topic</b>
Quarter 1	Unit 1 - Kinematics	19 Days	Kinematics in one and two dimensions, vectors, constant velocity, uniform accelerated motion, projectiles
	Unit 2 - Dynamics	22 Days	Forces, Newton's Laws, friction, ropes, pulleys, tension
	<b>Unit Name</b>	<b>Time Allotted</b>	<b>Summary of Topic</b>
Quarter 2	Unit 3 – Circular Motion and Gravitation	8 Days	Uniform circular motion, rotational dynamics, universal law of gravitation
	Unit 4 – Energy	22 Days	Work, power, kinetic energy, potential energy, conservation of energy
	Unit 5 - Momentum	13 Days	Impulse, momentum, conservation of momentum, elastic and inelastic collisions
	<b>Unit Name</b>	<b>Time Allotted</b>	<b>Summary of Topic</b>
Quarter 3	Unit 6 – Simple Harmonic Motion	4 Days	Linear restoring forces, simple harmonic motion graphs, simple pendulum, mass-spring systems
	Unit 7 – Torque and Rotational Motion	17 Days	Torque, center of mass, rotational kinematics, rotational dynamics, rotational inertia, rotational energy, angular momentum, conservation of angular momentum
	Unit 8 – Electric Charge and Electric Force	4 Days	Charge, conservation of charge, static electricity, Coulomb's Law
	Unit 9 – DC Circuits	12 Days	Electric resistance, Ohm's Law, series and parallel circuits, Kirchhoff's Laws
	<b>Unit Name</b>	<b>Time Allotted</b>	<b>Summary of Topic</b>
Quarter 4	Unit 10 – Mechanical Waves and Sound	14 Days	Traveling waves, wave characteristics, sound, superposition, standing waves on a string, standing sound waves
	Review for Mock AP Exam May 1	13 Days	Comprehensive review of Units 1-10
	AP Physics 1 Exam Wednesday, May 5, 12:00pm		

### III. Course Policies

#### Guided Notes and Homework

We will use guided notes and homework packets to maximize the amount of class time spent practicing math skills. Your student will receive a packet with fill-in-the-blank notes and homework for the entire unit at the beginning of each unit. This minimizes the time the students spend copying information, the time I spend passing out papers, and helps boost organization so students can develop a clear picture of the curriculum and connect lessons throughout the school year.

#### Grading

The grades which students receive in the AP® Physics 1 course are independent of the grades they receive on the AP® Physics 1 exam. In fact, the AP® Exam grades are not announced until July, long after teachers have turned in their course grades. Students who work hard and keep up can be expected to receive A or B grades; however, those who fall behind and give up on the course will receive grades lower than this.

However, students who meet the following three requirements:

1. Complete ALL homework and lab work on time.
2. Ensure all homework and lab work turned in is “of quality”
3. Receive a “pass” (i.e. “3” or better) on the AP® Physics 1 exam

will receive an “A” grade for both semesters of the course. If necessary, their grade will be changed to an “A” grade in July after the AP® Exam grades are released.

#### Extra Credit

Opportunities for extra credit will be limited to questions on quizzes and tests that reflect an understanding above and beyond the expectation of the course. However, I may offer optional assignments or challenges throughout the year that students may complete to earn *extra homework grades* to bolster their grade. Additional work/tasks will not be assigned to students seeking extra credit to improve their grade.

#### Late Work

- The penalty for late assignments is 10% per day for up to five days. After the fifth day, the student will receive a zero.
- If a student misses a quiz or test, it is assumed that they will complete it after school on their first day back unless they communicate otherwise. Lack of communication will result in a deduction of 10% per day up to five days. After the fifth day, the student will receive a zero.
- The penalty for other assignments such as long-term projects, papers, lab write-ups, etc. is 10% per day for up to five days. After the fifth day, the student will receive a zero.

#### Help Sessions

Help sessions will be available **Monday, Tuesday and Thursday from 2:45 PM – 3:30 PM** or by appointment. I am always happy to help by appointment!

#### Academic Dishonesty

Any student caught committing or facilitating academic dishonesty will receive no credit for the assignment and be referred to the office staff to discuss further consequences. Refer to your parent/student handbook for further details.

## Classroom Guidelines

1. Be **ready** in your seat when the bell rings.
2. Be **respectful** of others, their property, and opportunity.
3. Be **responsible** for your own learning.

Consequences for not following the guidelines are listed below and will be carried out in a manner that seems fit depending on the severity of the offense.

- Verbal warning
- After class discussion
- Parent intervention
- Drop in effort/conduct grade
- Office intervention

## Dropping This Class

OVCA policy states that a class may only be dropped at the semester; there is no two week window to test a class to see if it is a good fit for you. Additionally, honors/AP level courses utilize costly resources such as WebAssign which you may be required to cover if you choose to drop this course.

## Communication

Students are welcome to communicate by stopping by my classroom or via email. I will not respond to emails from students after 6:00 PM or over the weekends.

Parents desiring a personal conference should communicate with me first via email. I will not hold drop-in meetings concerning a student's academic performance.

## Final Comments

Please see the parents/student handbook for any questions not addressed in the syllabus. I have refrained from including OVCA school guidelines and procedures in this syllabus to conserve the school's resources.

On the next page is a contract of agreement. Please sign the agreement, students and parents, and return it by Wednesday, August 26, 2020. It is a homework grade.

If all of the information above seems scary; fear not, you are in good hands. I promise to provide any and all resources that I have in order to help you reach your goals. Last but not least, understand that your growth in Christ means far more than your success in this class. He is the first goal.



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### Contract of Agreement

#### Student

I have read the class syllabus and understand the classroom guidelines and policies as outlined. I agree to abide by the expectations and will commit myself to submitting quality work this school year.

Name (print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

#### Parent

I have discussed the syllabus with my student. I understand the syllabus, support it, and will make every effort to ensure my student's academic success as outlined in the syllabus.

Name (print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_