

Course Description

AP Physics 1 is an algebra based, introductory college level physics course that explores topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory simple circuits. Through inquiry based learning, students will develop scientific critical thinking and reasoning skills.

Course Materials

Students are expected to bring the following materials to class each day.

- Notebook
- Textbook (virtual students can arrange to pick up a textbook from CATA)
- Calculator (scientific is fine, graphing is better)
- AP Physics 1 Review Book (recommended)

Instructional Philosophy

The goal of the course is to provide students with a general background in physics that will lay the basic foundation for college courses. Instruction will be delivered mainly through lecture, in-class practice problems, and laboratory experiences. Students are expected to practice good note taking, work well with their peers on in-class assignments, and to apply their knowledge in the laboratory while following all safety instructions. Safety in the laboratory is very important and goofing off in lab will result in detention or a discipline referral as well as a zero on the lab assignment. All students will sign a lab safety contract at the beginning of the semester.

Course Standards

Unit 1 Kinematics

Kinematics in one dimension: constant velocity and uniform accelerated motion.

Vectors: vector components and resultant

Kinematics in two dimensions: projectile motion

Unit 2 Dynamics

Forces, types, and representations (free body diagrams)

Newton's first law

Newton's second law

Newton's third law

Applications of Newton's second law

Friction

Interacting objects: ropes and pulleys

Unit 3 Circular Motion and Gravitation

Uniform circular motion

Dynamics of uniform circular motion

Universal Law of Gravitation

Unit 4 Energy

Work

Power

Kinetic energy

Potential Energy: gravitational and elastic

Conservation of energy

Unit 5 Momentum

Impulse

Momentum

Conservation of momentum

Elastic and inelastic collisions

Unit 6 Simple Harmonic Motion

Linear restoring forces and simple harmonic motion

Simple harmonic motion graphs

Simple pendulum

Mass-spring systems

Unit 7 Rotational Motion

Torque

Center of Mass

Rotational kinematics

Rotational dynamics and rotational inertia

Rotational energy

Angular momentum

Conservation of angular momentum

Assignments

Assignments are to be completed by the assigned time on the due date. **I do not accept late work!** We will be making use of AP Classroom which is an online platform developed for AP courses. Students will receive login information for AP Classroom at the beginning of the semester. We will also be using Canvas. You will make arrangements for missed work according to the school policy. I accept little responsibility for work that you have missed, since it is your responsibility to get your assignments and make sure they are turned back in to me in a timely manner.

Assessment and Grading Plan

A variety of assignments contribute to the final six weeks grade in this course. The final letter grade is assigned according to UCPS grading policy. (A= 100-90%, B= 89-80%, C= 79-70%, D= 69-60%, F=59% or below.)

My grading policy is a weighted percentage system. All assignments are graded out of 100%.

Homework and classwork will count 50% towards your final grade and quizzes and tests will count 50%.

Quizzes will take place periodically to assess understanding and may be announced or unannounced.

Tests will be scheduled at the end of every unit

Make sure that you **show all your work** for every problem, including the formulas used, given information, and units. Partial credit may be awarded if your work shows that you were on the right track but ended up with the wrong answer.

Students will be required to take the final exam in AP Physics 1 in addition to the AP Physics 1 exam.

Attendance

Attendance is taken daily through Microsoft Teams. Students must log in to Teams each day during scheduled class time in order to be marked present for that day. An attendance list is downloaded around 15 minutes after class starts each day. If students are experiencing technology issues while at home, they must email Mr. Daniels so that he is aware of the problem. On Fridays, students must complete the Friday Check In assignment on Canvas in order to be marked present. The assignment must be completed by 3:00 PM on each Friday. On days when we are taking a quiz or test, students do not need to log in to Teams, attendance will be taken based on who completes the quiz that day.

Behavior

Classroom Expectations: (In addition to the UCPS and CATA rules)

- Come to class prepared.
- Always follow directions.
- Show respect for yourself, other students, and the teacher.

Consequences for inappropriate behavior:

1. Warning
2. Repeated warnings will result in referral to administrator OR direct referral if necessary according to Student handbook

Virtual Student Expectations

Virtual students, either Plan B or D, are expected to participate in online instructional activities for 90 minutes each day (Monday –Thursday) during their assigned class period. Attendance will be taken each day during the designated class period. Friday expectations for instruction and attendance will be communicated to students each week and students are expected to fulfill those requirements on time.

Students must have access to a computer and high speed internet. Students are to contact the school if they need assistance. It is expected that your camera and microphone be in working order at all times. Students can apply for a hot spot for access to high speed internet.

Students are expected to participate in online instruction and interact with the teacher and students when asked to do so during a class period.

Students are expected to turn in assignments on or before their due dates.

Students are expected to complete assignments, quizzes, and tests independently and without the use of unapproved support.

Online Learning Platform

Canvas: All assignments will be submitted on our "learning platform," Canvas. Assignments can be submitted a variety of ways including, uploading files, typing into text boxes, and sharing Google documents/presentations. Individual assignments will indicate which method of submission on Canvas is expected. If students need a refresher or have questions, they can access the [Canvas Student Guide](#) for specific instructions. It is the student's responsibility to ensure assignments are submitted on time and to contact the instructor if there is a problem. The Canvas Learning Platform logs every student log-in on Canvas which provides teachers with a list of when students log-in to Canvas using their user id.

Canvas is used to grade assignments as well, however, the grades in Canvas, while accurate to that assignment, are NOT the teacher's gradebook. The teacher's gradebook includes categories of assignments that may be weighted differently and may include grades for assignments that did not use the Canvas Learning Platform. Therefore, students and parents should always check their child's true average on the Parent Portal on Powerschool.

Resources

EmpowerED Family Portal - <https://www.ucps.k12.nc.us/domain/2917>

Textbook – College Physics AP Edition by Knight, Jones, and Field

Outside Help

This class moves fairly quickly, you are encouraged to seek help early and often if you are struggling in this course. I will have office hours and tutoring available every Friday by appointment. Email me at david.daniels@ucps.k12.nc.us to set up tutoring time.