PARK CITY HIGH SCHOOL

Standards-Based Education
Priority Standards

AP Physics C

PS 1 Students will understand the general relationships among position, velocity, and acceleration for the motion of a particle along a straight line. (College Board Physics C)

PS 2 Students will understand the special case of motion with constant acceleration. (College Board Physics C)

PS 3 Students will know how to deal with situations in which acceleration is a specified function of velocity and time so they can write an appropriate differential equation and solve it given initial value of v. (College Board Physics C)

PS 4 Students will be able to add, subtract, and resolve displacement and velocity vectors. (College Board Physics C)

PS 5 Students will understand the general motion of a particle in two dimensions so that, given functions x(t) and y(t) which describe this motion, they can determine the components, magnitude, and direction of the particle's velocity and acceleration as functions of time.(College Board Physics C)

PS 6 Students will understand the motion of projectiles in a uniform gravitational field. (College Board Physics C)

PS 7 Students will be able to analyze situations in which a particle remains at rest, or moves with constant velocity, under the influence of several forces. (College Board Physics C)

PS 8 Students will understand the relation between the force that acts on an object and the resulting change in the object's velocity. (College Board Physics C)

PS 9 Students will understand how Newton's Second Law, F = ma , applies to an object subject to forces such as gravity, the pull of strings, or contact forces. (College Board Physics C)

PS 10 Students will be able to analyze situations in which an object moves with specified acceleration under the influence of one or more forces so they can determine the magnitude and direction of the net force, or of one of the forces that makes up the net force, such as motion up or down with constant acceleration. (College Board Physics C)

AP Physics C

PS 11 Students will understand the significance of the coefficient of friction. (College Board Physics C)

PS 12 Students will understand the effect of drag forces on the motion of an object. (College Board Physics C)

PS 13 Students will understand Newton's Third Law so that, for a given system, they can identify the force pairs and the objects on which they act, and state the magnitude and direction of each force. (College Board Physics C)

PS14 Students will be able to apply Newton's Third Law in analyzing the force of contact between two objects that accelerate together along a horizontal or vertical line, or between two surfaces that slide across one another. (College Board Physics C)

PS 15 Students will know that the tension is constant in a light string that passes over a massless pulley and should be able to use this fact in analyzing the motion of a system of two objects joined by a string. (College Board Physics C)

PS 16 Students will be able to solve problems in which application of Newton's laws leads to two or three simultaneous linear equations involving unknown forces or accelerations. (College Board Physics C)

PS 17 Students will understand the definition of work, including when it is positive, negative, or zero. (College Board Physics C)

PS 18 Students will understand and be able to apply the work-energy theorem. (College Board Physics C)

PS 19 Students will understand the concept of a conservative force. (College Board Physics C)

PS 20 Students will understand the concept of potential energy. (College Board Physics C)

PS 21 Students will understand the concepts of mechanical energy and of total energy. (College Board Physics C)

PS 22 Students will understand conservation of energy. (College Board Physics C)

AP Physics C

PS 23 Students will understand the definition of power. (College Board Physics C)

PS 24 Students will understand the technique for finding center of mass. (College Board Physics C)

PS 25 Students will be able to define center of gravity and to use this concept to express the gravitational potential energy of a rigid object in terms of the position of its center of mass. (College Board Physics C)

PS 26 Students will be able to understand and apply the relation between center-of-mass velocity and linear momentum, and between center-of-mass acceleration and net external force for a system of particles. (College Board Physics C)

PS 27 Students will understand impulse and linear momentum. (College Board Physics C)

PS 28 Students will understand linear momentum conservation. (College Board Physics C)

PS 29 Students will understand the uniform circular motion of a particle. (College Board Physics C)

PS 30 Students will analyze situations in which an object moves with specified acceleration under the influence of one or more forces so they can determine the magnitude and direction of the net force, or of one of the forces that makes up the net force. (College Board Physics C)

PS 31 Students will understand the concept of torque.(College Board Physics C)

PS 32 Students will develop a qualitative understanding of rotational inertia. (College Board Physics C)

PS 33 Students will be able to analyze the forces that act on induced currents, so they can determine the mechanical consequences of those forces. (College Board Physics C)

PS 34 Students will be able to understand and apply the relation between center-of-mass velocity and linear momentum, and between center-of-mass acceleration and net external force for a system of particles. (College Board Physics C)

AP Physics C

PS 35 Students will understand electric potentials and capacitance. (College Board Physics C)

PS 36 Students will understand the relationship between electric field and electric flux. (College Board Physics C)

PS 37 Students should understand the concept of electric charge, so they can(College Board Physics C):

i. Describe the types of charge and the attraction and repulsion of charges.
ii. Describe polarization and induced charges.

PS 38 Students should understand Coulomb's Law and the principle of superposition, so they can (College Board Physics C):

i. Calculate the magnitude and direction of the force on a positive or negative charge due to other specified point charges.
ii. Analyze the motion of a particle of specified charge and mass under the influence of an electrostatic force.

PS 39 Students should understand the concept of electric field, so they can:

i. Define it in terms of the force on a test charge.
ii. Describe and calculate the electric field of a single point charge.
iii. Calculate the magnitude and direction of the electric field produced by two or more point charges.
iv. Calculate the magnitude and direction of the force on a positive or negative charge placed in a specified field.
v. Interpret an electric field diagram.
vi. Analyze the motion of a particle of specified charge and mass in a uniform electric field.

PS 40 Students should understand Gauss's Law, so they can:

1. State the law in integral form, and apply it qualitatively to relate flux and electric charge for a specified surface.
2. Apply the law, along with symmetry arguments, to determine the electric field for a planar, spherical, or cylindrically symmetric charge distribution.
3. Apply the law to determine the charge density or total charge on a surface in terms of the electric field near the surface.