

# Perry Local School Guaranteed and Viable Curriculum

## HS AP Physics C

## Power Objectives

### Physical Sciences

- SCAPPHC.3.1 Evaluate the historical development of astronomical science that led to the formulation of the law of universal gravitation.
- SCAPPHC.3.2 Apply principles of forces and motion to mathematically analyze, describe, and predict the net effects on objects and systems.
- SCAPPHC.3.2.a *Apply kinematical equations of motion and calculus to solve advanced problems involving one-dimensional motion.*
- SCAPPHC.3.2.b *Analyze and solve problems involving two-dimensional motion of projectiles in a uniform gravitational field by utilizing component vector resolution and applying calculus.*
- SCAPPHC.3.2.c *Analyze situations in which an object remains at rest or moves with constant velocity under the influence of several forces by utilizing Newton's three laws with the application of calculus.*
- SCAPPHC.3.2.d *Solve circular motion, torque, and angular momentum problems by utilizing the application of calculus and the principles of rotational kinematics & dynamics.*
- SCAPPHC.3.2.e *Calculate the total linear momentum, impulse, and the center of mass of a defined system of bodies.*
- SCAPPHC.3.2.f *Analyze the simple harmonic motion and energy content of a swing and spring pendulum and to identify points in the motion where the velocity and/or acceleration is zero or achieves its maximum positive or negative value.*
- SCAPPHC.3.2.g *Utilize Newton's Law of Universal Gravitation in order to calculate the orbital periods, velocities, energies of satellites and forces involved.*
- SCAPPHC.3.2.h *Solve static equilibrium problems by utilizing applications of calculus and Newton's 1st law of motion.*
- SCAPPHC.3.3 Characterize physical changes in terms of energy, work, and power.
- SCAPPHC.3.3.a *Calculate the work done, power needed, change in kinetic energy and/or potential energy on a system by applying calculus and the "work-energy" theorem.*

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### Scientific Inquiry

SCAPPHC.5.1

Demonstrate the use of the scientific method and technology in conducting scientific exercises.

SCAPPHC.5.1.a

*Formulate hypotheses to solve scientific problems.*

SCAPPHC.5.1.b

*Design experiments to test hypotheses.*

SCAPPHC.5.1.c

*Use basic laboratory skills to safely conduct experiments.*

SCAPPHC.5.1.d

*Gather and interpret qualitative and quantitative experimental data.*

SCAPPHC.5.1.e

*Utilize ethical practices in conducting laboratory experiments.*

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Scientific Ways of Knowing

SCAPPHC.6.1

Appraise emerging scientific issues associated with the physical sciences.