Physics

2020-2021 Syllabus

HILLGROVE HIGH SCHOOL

Ms. DeLeon email: christina.deleon@cobbk12.org Room 1207

General Office hours: 1:30 – 3:30 Monday – Friday

Parent Conferences: Monday-Thursday 3:30 -4:30

Daily materials

- Pencil
- Calculator
- Notebook Paper
- Folder or Binder

Other helpful items:

- Colored pencils or pens
- Ruler
- Protractor

Grades

Formative – 25%

- Labs

Formative – 25%

- Key Terms/Vocabulary
- Daily Assignments

Summative – 40%

- Tests

Final Exam – 10%

Overview of this physics class

Focuses on the interactions of physical objects and the concept of energy. Critical and higher-level thinking skills are encouraged in this course. Science is an experimental subject and hands-on learning is a must to get the most out of this class. The classroom (virtual or in person!) is a place where students can safely think about and explore the world we live in. Every student's opinion is respected and valued but requires student accountability and open communication regarding behavior, work and grades.

Use the outline and all resources in CTLS for a successful school year!

Scan for class website! Contains additional information for physics (organized by unit)

Overview of general classwork assignments

- **Key Terms:** This is an online assignment to help students review the primary vocabulary for the current unit.
- **Labs:** Labs will be assigned as necessary and may primarily be competed virtually.
- **Daily work:** This will include practice work, various activities to review concepts, review sheets and other assignments.

Physics Outline

Unit 0 – Fundamentals: Si units, converting units, dimensional analysis, graphing, making measurements and observations, simple equation algebra

Unit 1[a] – Velocity: simple constant motion, speed, velocity, interpreting motion graphs (position v. time and velocity v. time)

Unit 2[a] – Acceleration: accelerated motion, freefall, interpreting motion graphs

Unit 3 – Projectiles: vector combinations (same direction, opposite direction, perpendicular vectors), projectile motion (horizontally launched with calculations, non-horizontally launched by vector components)

Unit 4[b] – Newton's Laws: newton's 3 laws of motion

Unit 5[b] – Applications of Newton's Laws: specific forces and uses of Newton's laws, friction, pressure, air resistance, circular motion, universal gravitation

Unit 6 – Momentum: momentum, impulse, collisions, conservation of momentum

Unit 7 – Mechanical energy: work, power, potential and kinetic energy, conservation of energy

Unit 8[c] – Electrostatics: electric charge interactions, methods of electrical charging, electrical potential energy

Unit 9[c] – Electric current: flow of electric charge (current), voltage, resistance, electric power, circuits (series and parallel)

Unit 10 – Magnetism: cause of magnetism from atomic level up to bar magnet, electromagnetism (build an electromagnet), electric motor, electric generator, transformer, electrical power distribution

Unit 11[d] – Mechanical waves: simple harmonic motion (pendulum), transverse and longitudinal waves, interference, standing waves

Unit 12[d] – Sound waves: specific longitudinal waves, Doppler effect, resonance, diffraction, interference

Unit 13 – Light and color: electromagnetic waves/radiation, electromagnetic spectrum, human light/color reception, color mixing, polarization, refraction, diffraction

Unit 14 – Optics: reflection, refraction, mirrors (plane, concave, convex), lenses (convex, concave), ray diagrams, image formation (real, virtual)