

PHYSICS (UPPER LEVEL)

COURSE OBJECTIVE

To explore the main topics of Physics and develop a working knowledge of the topic. The investigation is to promote students to apply critical thinking skills and have an appreciation for the workings of their natural world and how those processes exist in every moment, in conjunction with advancing the students interests and combining them in self-discovery and advancement.

FORMAT

We will use lectures and labs to introduce physical themes and core concepts accompanied by individual exploration through data collection, projects, and exposure to physics in nature and industry. Labs will be intensive in this course to enhance conceptual understanding and to explore natural phenomena.

Text Book: Pearson Physics & Pearson Physics Lab Manual

CLASS PREPAREDNESS

Arrive to class with a notebook and writing utensil (colored pencils/pens are recommended as well) daily. Taking notes on lecture materials and labs are highly encouraged in notebooks. It is the preferred method for note taking, computers/tablets are not acceptable. Computers will be used in class for research, projects, and composing assignments.

TECHNOLOGY

The use of computers, tablets, cell phones, etc. are not permitted in class unless otherwise specified by the instructor.

GRADING

Grades will be calculated based on participation, homework, projects, in-class work and labs, and quizzes and tests.

The scale is the traditional 10% scale: A=100-90, B=89-80, C=79-70, D=69-60, & E=59-0

Participation = 10%

HW = 15%

In-Class Work = 15%

Labs = 20%

Projects = 20%

Quizzes & Tests = 20%

LEARNING SCHEDULE & COVERED TOPICS

Topic	Subtopics	Labs
Introduction to Physics.	What, Why, History, and You & Physics	Demos & Hypothesis Measurements & Investigations
Motion	A. Speed and Velocity B. Acceleration C. Vectors D. Newton's Laws of Motion	<ul style="list-style-type: none"> • Walk, Run, Skip, Sprint Velocity
Work and Energy and Force	A. Work B. Energy C. Conservation D. Heat E. Thermodynamics	<ul style="list-style-type: none"> • Resistance in Motion • Thermal Cup
Waves and Light	A. Oscillations B. Waves C. Sound D. Light E. Properties F. Reflection G. Refraction	<ul style="list-style-type: none"> • Light Spectrum • Reflection & Refraction • Light vs. Physical Waves
Electricity	A. Electric Charge B. Force C. Fields D. Energy E. Circuits and Currents	<ul style="list-style-type: none"> • Circuits • Electron Sharing
Magnetism	A. Fields B. Currents C. Electromagnetic Induction	<ul style="list-style-type: none"> • The Wonderful World of Magnets
Advanced Physics	A. Quantum B. Atomic C. Nuclear D. Relativity	<ul style="list-style-type: none"> • None

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LATE POLICY

All work turned in late is subject to a daily 20% reduction in grade.