PATTISON HIGH SCHOOL
We don't teach a class, we teach individual students in a class

PHYSICS 11

TEACHER: Mr. Basil Williams
ROOM: 109
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TEXTBOOK: BC Physics 11

COURSE OBJECTIVE

Physics 11 introduces the foundational concepts that describe the physical world, including motion, forces, energy, waves, light, and nuclear processes. Also, this course will emphasize curricular competencies of reasoning, problem-solving, and communication.

Students will:

- Apply the scientific method to analyze phenomena.
- Develop critical and analytical skills through modeling and data analysis.
- Communicate using scientific language, mathematics, and diagrams.
- Explore both theoretical concepts and real-world applications of physics.
- Engage in inquiry-based learning and laboratory investigations.
- Develop scientific reasoning, quantitative analysis, and data interpretation skills.
- Apply physics concepts to real-world problems and technologies.
- Communicate ideas using clear mathematical, graphical, and written forms.

Big Ideas (BC Curriculum):

- An object's motion can be predicted, analyzed, and described.
- Forces influence the motion of objects.
- Energy is conserved and its transformation explains natural phenomena.
- Mechanical waves transfer energy but not matter.
- Light can be described using both a wave model and a ray model.
- Radioactivity and nuclear processes have implications for society and technology.

SUPPLEMENTARY RESOURCES

Book: *Physics of the Impossible* – Michio Kaku
Book: *Six Easy Pieces* – Richard Feynman
Book: *How Not to Be Wrong: The Power of Mathematical Thinking* – Jordan Ellenberg
Book: *Astrophysics for People in a Hurry* – Neil deGrasse Tyson

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COURSE CONTENT

Unit 0: Problem Solving and Scientific Method (pre-unit foundation)
Unit 1: Skills, Method, and the Nature of Physics (measurement, uncertainty, graphing, lab skills)
Unit 2: Kinematics (describing and graphing motion in one and two dimensions)
Unit 3: Dynamics (forces, Newton's laws, applications)
Unit 4: Work, Energy, and Power
Unit 5: Momentum and Collisions
Unit 6: Circular Motion and Gravitation
Unit 7: Waves and Sound (properties of waves, resonance, applications)
Unit 8: Optics (reflection, refraction, lenses, and optical systems)
Unit 9: Nuclear Physics & Modern Applications (radioactivity, half-life, societal impact)
Final Exam Preparation & Review

SUPPLIES (to be brought to every class)

2-inch 3-RING binder with lined paper
Pencils, eraser, Ruler*, Protractor*, Compass (OR *Complete Geometry set)
Scientific or Graphing Calculator (Recommended models: TI-83/84)

MARK BREAKDOWN

Classwork 20%

Includes readings, activities, and workbook assignments.

Labs and Quizzes and Tests 25%

Includes lab investigations and quizzes following each unit.

Tests 10%

Includes lab investigations and quizzes following each unit.

Mid and Term Finals 20%

Cumulative tests covering multiple units.

Final Project 5%

Includes term-based and final projects designed to apply learning.

Final Exam 20%

A comprehensive exam covering the entire course.

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Assessment Philosophy

The assessments are designed to promote growth, measure understanding, and reflect the diverse skills needed in scientific learning. Students will be assessed through a variety of formats, including classwork, laboratory investigations, quizzes, projects, and exams. Emphasis on problem-solving encourage persistence, creativity, and the use of multiple strategies, and a growth mindset.

Classwork, practice problems, and in-class activities provide regular feedback and opportunities to improve.

Quizzes and tests measure student achievement of learning standards and the application of knowledge and inquiry skills.

Laboratory investigations emphasize accurate measurement, effective data analysis, and clear communication of results.

Final Project allows students to demonstrate their ability to communicate scientific ideas, make real-world connections, and reflect on the role of physics in society.

Midterm, term finals, final exams measure mastery of concepts and readiness for post-secondary studies.

The overall goal of assessment is not only to evaluate student achievement but also to help students reflect on their progress, build confidence in applying physics concepts, and prepare for future scientific learning.