



AP Physics C - Mechanics

Grand Haven High School



Course Number: D68A / D68B

Grade Level: 11/12

Credits : 1

Prerequisite Courses : Calculus (AB or BC) or Concurrently

Course Description

This course is equivalent to a first-year college physics class and is designed to prepare students for the AP Physics C Mechanics Exam given in May. Physics is the most fundamental of the sciences and deals with the relationships between matter and energy. Laboratory experiments are done to reinforce Physics concepts and give first hand experiences with basic and advanced lab procedures and equipment. The book "Giancoli - Physics for Scientists and Engineers" 4th edition is provided to students in hard copy form.

Course Objectives

This course follows the suggested unit design and sequence as established by the AP Board for AP Physics C - Mechanics. As this course requires and employs a basic understanding of calculus (differentiation and integration), students must have successfully completed the prerequisite calculus course, or be concurrently enrolled in such a course. An introductory physics course, though helpful, is not a prerequisite as there are limited opportunities for our students to complete such a course prior to their senior year. As with the introductory course, the major themes presented in this course will be developed conceptually prior to quantitative analysis. In contrast with the introductory course, our quantitative and laboratory study will use the language of calculus to develop a functional understanding of the physical laws, with the emphasis on problem solving and critical thinking.

Student Expectations

For Behavioral Expectations, see bottom of this page. All students and staff are expected to do their personal best in class daily. It is expected that students come to class ready to learn and are prepared to learn everyday. The classroom and laboratory have the potential to pose dangers to the student. Students will read and sign a Lab Safety Contract.

Communication

Building Behavioral Expectations

TEAM GH ... One Team, One Family, One Grand Haven. Be Kind. Always.

It is our expectation that ALL GHHS students, staff and parents will ... always give their best **EFFORT** in everything that they do, work hard to be **INCLUSIVE** of each other, show **RESPONSIBILITY** in class, the hallways, cafeteria and at events, and **WORK TOGETHER** at all times!

GO BUCS

Students and parents have immediate access to grades by using the Parent Internet Viewer. Teachers of this course will provide communication to parents of poorly performing students. Teachers are available for parental contact by phone and email. The teacher may use a teacher blog or other online resource to facilitate learning.

Grading Policy

Please see the link for the Science Department Grading Scale

This course has two graded categories:

Assessments (Tests/Quizzes): 70% of overall grade

Homework/Labs/Classwork/Other: 30% of overall grade

Scope and Sequence

Chapter 1- Introduction (partial) *summer reading and problem set

Unit 1: Kinematics

Chapter 2: Describing Motion: Kinematics in One Dimension

Chapter 3: Kinematics in Two & Three Dimensions; Vectors; Relative Velocity

Unit 2: Force and Translational Motion

Chapter 4: Dynamics: Newton's Laws of Motion

Chapter 5: Using Newton's Laws; Friction, Circular Motion, Drag

Chapter 6: Gravitation and Newton's Synthesis (select portions of this chapter)

Chapter 9: Linear Momentum (select portions of this chapter)

Unit 3: Work, Energy and Power

Chapter 7: Work and Energy

Chapter 8: Conservation of Energy

Unit 4: Systems of Particles & Linear Momentum

Chapter 9: Linear Momentum

Unit 5: Torque and Rotational Dynamics

Chapter 10: Rotational Motion (select portions of this chapter)

Chapter 11: Angular Momentum and General Rotation (select portions of this chapter)

Unit 6: Energy and Momentum of Rotating Systems

Chapter 10: Rotational Motion (select portions of this chapter)

Chapter 11: Angular Momentum and General Rotation (select portions of this chapter)

Unit 7: SHM and Vibrations

Chapter 14: Gravitation and Newton's Synthesis

Portions of these units may include independent study related to essential physics standards not addressed by the AP Physics C - Mechanics course. These additional topics are required to meet the State of Michigan graduation requirements for physics. These additional topics are addressed in PS Physics and Honors Physics B, so students who have completed either or both of these courses are exempt from this independent study requirement.

Additional Independent Study Topics

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Vibrations and waves, forced vibration, resonance, electrical charge, electrical energy, electrical power, electromagnetic induction

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