



# CHELMSFORD HIGH SCHOOL

## Physics H SYLLABUS

2023-2024

### **COURSE DESCRIPTION**

High School Physics standards expect students to apply a variety of science and engineering practices to three core ideas of physics:

1. Motion and Stability: helps students answer the question, “How can one explain and predict interactions between objects and within systems of objects?” Students are able to demonstrate their understanding by applying scientific and engineering ideas related to Newton’s second law, total momentum, conservation, system analysis, and gravitational and electrostatic forces.
2. Energy: develops students’ understanding of energy at both the macroscopic and atomic scales, and helps students answer the question, “How is energy transferred and conserved?”

Lab investigations, demonstrations, and collaborative activities are designed and structured for each level offered within the curriculum.

*Prerequisite: Successful performance in previous Honors level Science course, or advanced performance in previous CP level science course; co-enrolled in Algebra II H or completed Algebra II CP and above.*

### **REQUIRED TEXTS**

Online textbook: [Physics Classroom](#)

### **COURSE GOALS and STUDENT LEARNING OUTCOMES:**

By the end of the course, students will be able to...

- Understand how to quantify and model systems involving motion in 1D, 2D and rotation.
- Understand and apply Newton’s laws of motion and gravitation.
- Understand and apply the laws of conservation of momentum and conservation of energy.

### **COURSE STANDARDS**

<https://www.doe.mass.edu/frameworks/scitech/2016-04.pdf>

### **PERSONS WITH DISABILITIES**

Chelmsford High School is committed to supporting the success and well-being of all students, regardless of varying abilities and levels of adaptive skills. The Special Education office provides services and resources to empower each student to attain their highest level of academic success and learning independence.

### **ACADEMIC INTEGRITY**

At Chelmsford High School, students are expected to maintain high moral and ethical standards, as exemplified by the final sentence of our mission statement: “A spirit of respect is fostered, as members take

*responsibility for their actions and acknowledge the rights and differences of others.” (CHS Mission Statement)*

Students should respect themselves, other students, staff members and the school. The acts of cheating and plagiarism violate expectations that students will exhibit respectful, ethical behavior.

[The Academic Honor Code](#) exists to address the issues of cheating and plagiarism.

## **GRADING POLICIES**

Please connect with individual teachers for specific information regarding grading. Students will be able to monitor academic progress biweekly through X2/ASPEN.

Students are strongly encouraged to take advantage of the academic support programs and services (such as PRIDE Block, after-school help, etc.) available to them to help ensure and support success. Information about these services can be provided by your teacher, guidance counselor, or administration.

## **COURSE SKILLS**

The following skills are addressed in this course:

- Visual Representations - Analyze and/or use representations of physical situations, excluding graphs.
- Questions and Method - Determine scientific questions and methods
- Representing Data and Phenomena - Create visual representations or models of physical situations.
- Data Analysis - Analyze quantitative data represented in graphs.
- Theoretical Relationships - Determine the effects on a quantity when another quantity or the physical situation changes.
- Mathematical Routines - Solve problems of physical situations using mathematical relationships.
- Argumentation - Develop an explanation or scientific argument.

## **COURSE OUTLINE**

Honors Physics is divided into nine units:

Unit 1: Representing Motion

Unit 2: Accelerated Motion

Unit 3: Forces in 1D

Unit 4: Forces in 2D

Unit 5: Projectile Motion

Unit 6: Work and Energy

Unit 7: Momentum

Unit 8: Rotational Motion

*This syllabus and course outline are subject to change as Chelmsford High School seeks to continually improve the learning experiences for all students.*

*"We foster PRIDE\* in our pursuit of excellence."*

**PRIDE refers to our five core values – Perseverance, Respect, Integrity, Dedication, and Empathy. These five pillars represent our points of emphasis in supporting the development of quality students and quality citizens.**