Course Name: Physics
School Year: 2025-2026

Course Purpose and Relevance:

The Physics course aims to immerse students in the foundational principles of physics through hands-on laboratory and field investigations. Students explore core concepts such as motion, forces, energy, waves, electricity, and magnetism, applying critical thinking and problem-solving skills to design and interpret experiments. By understanding the laws governing physical systems and the nature of scientific inquiry, students develop the ability to analyze data, construct models, and communicate scientific findings effectively. The course also integrates engineering practices, emphasizing the application of scientific knowledge to real-world problems. Understanding physics prepares students for advanced studies in science and engineering, fostering skills that are essential for informed decision-making in technology-driven and environmentally conscious contexts. By engaging with both theoretical and practical aspects of physics, students gain insights into the natural world and its underlying principles, preparing them for diverse careers in STEM fields.

Overview of Student Outcomes:

In this Physics course, students, for at least 40% of instructional time, will gain a comprehensive understanding of fundamental concepts and practices in physical science through hands-on experiments and critical analysis. The course emphasizes key physics topics, including:

- Laws of Motion: Students will study Newton's laws, analyzing different types of motion and the effects of forces on objects. They'll explore concepts like distance, displacement, speed, and acceleration, and understand the principles of equilibrium and inertia.
- Energy and Momentum: Students will investigate the conservation of energy and momentum, including calculations of work, power, and various forms of energy. They'll apply these concepts to real-world scenarios such as automotive safety and athletic performance.
- Wave Characteristics: The course covers wave behavior, including the properties of transverse and longitudinal waves, and phenomena like reflection, refraction, and interference. Students will also explore the electromagnetic spectrum and its applications.
- Electromagnetism: Students will delve into electric and magnetic forces, understanding Coulomb’s law, circuit analysis, and the principles of electromagnetism.
- Quantum Phenomena: The course introduces quantum concepts such as the photoelectric effect, wave-particle duality, and their practical applications in technology and cybersecurity.

Students will engage in a variety of investigations—descriptive, comparative, and experimental—using scientific and engineering practices. They will develop models, analyze data, and communicate their findings effectively.

Science is viewed through *recurring themes* of systems, models, and patterns. Students will learn to analyze systems in terms of their components and their interactions, using models to make predictions and understand scientific concepts. This approach helps students grasp how systems function and interact with their environment, providing a strong foundation for further scientific study and application.

Available Support for Student Learning:

Refer to the teacher’s Course Syllabus for resources and course specific opportunities.
Student textbook and/or digital version are available through the CCISD Student Portal.

Link to Course TEKS on State website:

Physics High School TEKS

Year-at-a-Glance 25-26	Subject	Physics On-Level

	First Semester Instruction
1st Nine Weeks	Unit 1: Scientific and Engineering Practices BB 1: Lab Safety in Physics (1C) BB 2: Exploring Phenomena through Inquiry (1-4) **TEKS 1-4 will be embedded throughout each unit supporting the implementation of 3-Dimensional Instruction.*
	Unit 2: Analyzing Motion (1D Constant) BB1: Interpreting Motion Graphs (5A - position vs. time graphs) BB2: Scalar and Vector Quantities (5B) BB3: 1-Dimensional Motion Equations (5C)
	Unit 3: Analyzing Motion (1D Accelerated) BB1: Velocity vs. Time and Acceleration vs. Time graphs (5A) BB2: Equations with acceleration (5C)
2nd Nine Weeks	Unit 4: Force Interactions BB 1: Newton's 1st and 3rd Law (5E, 5G) BB 2: Newton's 2nd Law (5F) BB3: Applying All Three Laws: Motion in the Real World (5E, 5F, 5G)
	Unit 5: Motion in 2D BB 1: Analyzing Horizontal Projectile Motion (5D) BB 2: Analyzing Uniform Circular Motion (5D) BB 3: Newton's Law of Universal Gravitation (5H)
	Semester Exam/District Created CBA Early Release 12/19

Year-at-a-Glance 25-26	Subject	Physics On-Level

	Second Semester Instruction *Instructional Days:* Instructional Days: Q3: 37 + 4.5 for 9 weeks tests Q4: 42 + 4.5 days Semester Exams
3rd Nine Weeks	Unit 6: Energy in Systems BB 1: Mechanical, Potential, and Kinetic Energy (7B) BB 2: Work and Power (7A) BB3: Work-Energy Theorem (7C)
	Unit 7: Momentum & Collisions BB 1: Describing Impulse and Momentum (7D) BB 2: Analyzing the Conservation of Momentum (7E)
	Unit 8: Electromagnetism BB 1: Conservation of Charge & Electric Forces (6C, 6A) BB 2: Electric & Magnetic Fields (6B) BB3: Circuit Construction & Design (6D) BB4: Ohm's Law and Circuit Math (6E)
4th Nine Weeks	Unit 9: Waves and Light BB 1: Simple Harmonic Motion and Wave Generation (8A) BB 2: Characteristics of Waves (8B, 8C) BB 3: Behavior of Waves & Image Formation (8D, 8G) BB 4: Electromagnetic Spectrum (8E) BB 5: Atomic Spectra and the Photon Model (8F, 9A) BB 6: Modern Physics & Applications (9B, 9C, 9D)
	Semester Exams **Early Release 5/21**