

**Course Name: Integrated Physics and Chemistry (IPC)****School Year: 2025-2026****Course Purpose and Relevance:**

The **Integrated Physics and Chemistry** course offers students a comprehensive foundation in the fundamental principles of both physics and chemistry through hands-on laboratory and field investigations. Students will explore core concepts such as force, motion, energy, matter, and chemical reactions, applying critical thinking and problem-solving skills to design and interpret experiments. The course integrates scientific and engineering practices to offer a holistic understanding of physical and chemical phenomena. By mastering these principles, students develop the ability to analyze data, construct models, and communicate scientific findings effectively. This integrated approach prepares students for advanced studies in science and engineering and equips them with essential skills for informed decision-making in technology-driven and environmentally conscious contexts. Engaging with both theoretical and practical aspects of science, students gain insights into the natural world and its underlying principles, setting a strong foundation for diverse STEM careers.

**Overview of Student Outcomes:**

In this **Integrated Physics and Chemistry** course, students, for at least 40% of instructional time, will develop a thorough understanding of key concepts and practices in both physical and chemical sciences through hands-on experiments and critical analysis. The course emphasizes:

- **Force and Motion:** Students will investigate and model motion in terms of position, velocity, acceleration, and time, analyzing data to understand the relationship between mass and acceleration. They will explore momentum, impulse, and the four fundamental forces, including gravitation, electromagnetic forces, and nuclear forces.
- **Energy Transfer and Conservation:** Students will design and construct circuits, evaluate energy conservation within closed systems, and investigate energy transfer through different media. They will explore wave behavior, including interference, reflection, and refraction, and evaluate the impact of various energy sources on society and the environment.
- **Structure and Properties of Matter:** Students will model atomic structure, relate it to bonding and reactivity, and use patterns in the Periodic Table to predict properties. They will investigate how chemical and physical properties influence the use of substances in daily life and understand electron transitions and atomic energy levels.
- **Chemical Reactions and Changes:** The course covers how changes in matter affect everyday life, including investigating chemical reactions, balancing equations, and analyzing the environmental impact of chemical processes. Students will develop and use models to understand these reactions and their implications.

Throughout the course, students will engage in descriptive, comparative, and experimental investigations, using scientific and engineering practices to develop evidence-based explanations and communicate findings. They will analyze systems, identify patterns, and use models to make predictions and understand scientific concepts.

This integrated approach ensures that students grasp how physical and chemical systems function and interact with their environment, providing a strong foundation for further scientific study and practical application in various STEM fields.

**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:**[IPC TEKS Link](#)

Year-at-a-Glance 25-26		Subject	IPC
		First Semester Instruction	
1 <sup>st</sup> Nine Weeks		<b>Unit 1: Scientific and Engineering Practices</b> BB 1: Lab Safety in IPC (1C) BB 2: Exploring Phenomena through Inquiry (1-4) <i>TEKS 1-4 will be embedded throughout each unit supporting the implementation of 3-Dimensional Instruction.</i>	
		<b>Unit 2: Solutions</b> BB 0: States of Matter and Solutions Review (6.6A <sup>^</sup> , 7.6D <sup>^</sup> ) BB 1: Factors Affecting Solubility (7F)	
		<b>Unit 3: Atomic Structure and Periodic Table</b> BB 1: Atomic Structure (7A) BB 2: Patterns within the Periodic Table (7B) BB3: Application of Physical and Chemical Properties (7C)	
		<b>Unit 4: Bonding and Chemical Equations</b> BB 1: Bonding and Reactivity (7A, 7B) BB 2: Balancing Chemical Equations (8B)	
2 <sup>nd</sup> Nine Weeks		<b>Unit 5: Reactions</b> BB 1: Chemical Reactions (8A,7F) BB 2: Nuclear Reactions (5D, 8C)	
		<b>Unit 6: Environmental Impact</b> BB 1: Environmental Impact of Reaction Byproducts (8D)	
		<b>Semester Exam/District Created CBA</b> Early Release 12/19	

Year-at-a-Glance 25-26		Subject	IPC
	Second Semester Instruction		
3 <sup>rd</sup> Nine Weeks	<b>Unit 7: Waves &amp; Light</b> BB 1: Wave Energy Transfer & Transmission (6E) BB 2: Atomic Emission & Energy Transitions (7D, 7E) BB3: Wave Reflection, Refraction & Interference (6F)		
	<b>Unit 8: Motion (5A)</b> BB 1: Describing Motion (5A) BB 2: Acceleration (5A)		
	<b>Unit 9: Net Force and Momentum (5B, 5C)</b> BB 1: Forces & Newton's Second Law (5B) BB 2: Momentum & Impulse (5C)		
4 <sup>th</sup> Nine Weeks	<b>Unit 10: Fundamental Forces (5D, 5E)</b> BB 1: Four Fundamental Forces (5D) BB 2: Gravitational Interactions (5E) BB3: Electrical Interactions (5E)		
	<b>Unit 11: Energy Transfer &amp; Conservation (6C, 6D)</b> BB 1: Thermal Energy Transfer (6D) BB 2: Conservation of Energy (6C)		
	<b>Unit 12: Electricity &amp; Electromagnetism</b> BB 1: Real-World Circuits (6A) BB 2: Energy Generation with Magnetism (6B)		
	<b>Unit 13: Environmental Impact</b> BB 1: Renewable & Nonrenewable Resources (6G)		
	<b>Semester Exams</b> <b>Early Release 5/21</b>		