

Integrated Physics and Chemistry explores the nature of force, motion, energy, and matter. Course topics include kinematics, force, momentum, waves, atoms, the periodic table, molecular bonding, chemical reactivity, electricity, and nuclear energy.

The course provides students with opportunities to learn and practice scientific skills within the context of relevant scientific questions. Scientific inquiry skills are embedded in the direct instruction, through which students learn to ask scientific questions, deconstruct claims, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Lab activities reinforce skills related to writing, communication, and critical thinking, in addition to helping students develop a deeper understanding of the nature of science. Throughout this course, students are given an opportunity to understand how physics and chemistry concepts are applied in technology and engineering.

This course is built to the Texas Essential Knowledge and Skills (TEKS) Integrated Physics and Chemistry Standards and Benchmarks.

Length: Two Semesters

### **Unit 1: Science and Engineering**

- Science and Society
- Scientific and Engineering Processes
- Analyzing and Interpreting Data
- Science and Engineering Wrap-Up

### **Unit 2: The Physics of Moving Objects**

- Characteristics of Moving Objects
- Velocity and Acceleration
- The Physics of Moving Objects Wrap-Up

### **Unit 3: Forces and Newton's Laws**

- Newton's Laws of Motion
- Fundamental Forces
- Density and Buoyancy
- Forces and Newton's Laws Wrap-Up

### **Unit 4: Momentum and Energy**

- Momentum
- Energy
- Momentum and Energy Wrap-Up

### **Unit 5: Semester 1 Review and Exam**

- Semester 1 Review and Exam

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**Unit 6: Waves**

- Wave Properties and Interactions
- Electromagnetic Waves
- Applications of Waves
- Waves Wrap-Up

**Unit 7: Structure and Properties of Matter**

- Structure of Matter
- Properties of Matter
- Thermal Energy
- Structure and Properties of Matter Wrap-Up

**Unit 8: Chemical Reactions and Solubility**

- Describing Chemical Reactions
- Solubility
- Chemical Reactions and Solubility Wrap-Up

**Unit 9: Electricity and Energy Resources**

- Electricity and Currents
- Electromagnetism
- Sources of Energy
- Electricity and Energy Resources Wrap-Up

**Unit 10: Semester 2 Review and Exam**

- Semester 2 Review and Exam