

Physical Science Course Syllabus

This course is designed as an interactive introduction to basic physics and chemistry. Topics include forces and motion, energy through waves, electricity and magnetism, the matter around us, chemical bonding and reactions.

This course is designed to serve as a foundation for the study of the physical sciences. Students use scientific inquiry and higher-order problem solving as they explore these topics through interactive simulations, and both virtual and hands-on experiences. In addition, technology, engineering, and mathematics (STEM) concepts are integrated throughout the course. Collaborative projects and real-world assessments aid the student in ultimately demonstrating an understanding of the importance of the physical and chemical properties of the world around them.

Estimated Completion Time: 2 segments / 32–36 weeks.

Major Topics and Concepts:

Segment I:

Module One: Motion

- 01.00 Motion Pretest
- 01.01 The Study of Science
- 01.02 Speed, Velocity, and Acceleration
- 01.02 Honors Speed, Velocity, and Acceleration
- 01.03 The Laws of Motion
- 01.03B Momentum
- 01.04 Forces in Action
- 01.05 Energy
- 01.06 Work and Power
- 01.07 Motion Discussion-Based Assessment
- 01.08 Motion Module Exam

Module Two: Waves

- 02.00 Waves Pretest
- 02.01 Waves
- 02.02 Sound
- 02.02 Honors Sound
- 02.03 The Electromagnetic Spectrum—The Visible
- 02.04 The Electromagnetic Spectrum—The Non-Visible
- 02.05 Science and You
- 02.06 Waves Discussion-Based Assessment

- 02.07 Waves Module Exam

Module Three: Electricity

- 03.00 Electricity Pretest
- 03.01 Electrical Charges
- 03.02 Electric Current
- 03.03 Circuits
- 03.04 Electromagnetism
- 03.05 Energy Resources
- 03.06 Human Impacts on the Environment
- 03.06B Engineering Design I
- 03.07 Electricity Discussion-Based Assessment
- 03.08 Electricity Module Exam
- 03.09 Segment One Exam

Segment II

Module Four: Classifying Matter

- 04.00 Classifying Matter Pretest
- 04.01 States of Matter
- 04.02 Classifying Matter
- 04.03 Properties of Matter
- 04.04 Atomic Theory
- 04.04 Honors Atomic Theory
- 04.05 Properties of Atoms
- 04.06 The Periodic Table of Elements
- 04.07 Classifying Matter Discussion-Based Assessment
- 04.08 Classifying Matter Exam

Module Five: Chemical Properties

- 05.00 Chemical Properties Pretest
- 05.01 Electrons and Bonding
- 05.02 Ionic and Covalent Bonds
- 05.03 Chemical Formulas
- 05.04 Hydrogen Hydroxide
- 05.05 Acids and Bases
- 05.06 Lab Time: Acid and Base Indicators
- 05.07 Chemical Properties Discussion-Based Assessment
- 05.08 Chemical Properties Module Exam

Module Six: Reactions

- 06.00 Reactions Pretest

- 06.01 Chemical Reactions
- 06.02 Classifying Chemical Reactions
- 06.03 Chemical Reactions and Energy
- 06.03B Modeling Chemical Reactions
- 06.04 Reaction Rates and Temperature Laboratory
- 06.04B Chemical Reaction Systems
- 06.05 Radioactivity
- 06.06 Nuclear Reactions
- 06.06 Honors Regulating Nuclear Power
- 06.07 Impact of Biotechnology
- 06.07B Engineering Design II
- 06.08 Reactions Discussion-Based Assessment
- 06.09 Reactions Module Exam
- 06.10 Segment Two Exam

Course Assessment and Participation Requirements:

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, “any pace” still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with instructors; the minimum requirement is monthly. When instructors, students, and parents work together, students are successful.
