

Course Description:

MS Physical Science (1 of 2) examines concepts from the fields of chemistry, biology, and ecology. The relationship between matter, energy, and chemical reactions is explored to understand cellular respiration and photosynthesis, while synthetic materials are analyzed to see how they impact society.

Course Objectives:

- Apply scientific processes to conduct investigations.
- Use logical thinking to identify relationships and draw conclusions.
- Evaluate topics in chemistry, biology, and ecology to better understand matter, energy, chemical reactions, cellular respiration, photosynthesis, and synthetic materials.

Required Materials:

In course.

Schedule of Work:

Unit 1: Matter

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Matter vs. Not Matter
 - Types of Energy
 - Elements and Atoms
 - Notable Atoms in the Human Body
 - Behavior of Atoms
 - Small Molecules
 - Extended Structures
 - Modeling Giant Molecules
 - Polymers
- Lesson Reviews and Discussion Board
- Project: 3-D Models
- Checkpoints 1–4
- Unit 1 Exam

Unit 2: States and Phases of Matter

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Heat, Thermal Energy, and Temperature
 - Measuring Heat, Thermal Energy, and Temperature
 - States of Matter: Gas
 - States of Matter: Liquid
 - States of Matter: Solid
 - Phase Changes: Increasing Thermal Energy
 - Phases Changes: Decreasing Thermal Energy
 - Phase Change Diagram

- Modeling Physical Change
- Lesson Reviews and Discussion Board
- Project: Understanding Phase Changes
- Checkpoints 6–9
- Unit 2 Exam

Unit 3: Chemical Reactions

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Chemical Reactions
 - Conservation of Mass
 - Physical and Chemical Properties
 - Properties in Reactions
 - Evidence of Chemical Reactions
 - Detecting Chemical Change
 - Energy in Reactants and Products
 - Dissolution
- Lesson Reviews and Discussion Board
- Project: Designing a Cold Pack
- Project: Improving a Cold Pack
- Checkpoints 11–14
- Unit 3 Exam

Unit 4: Chemistry of the Human Body

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Molecules in Food
 - Why We Eat
 - Molecules as Fuel
 - Burning and Oxygen
 - Molecules as Building Blocks
 - Cellular Respiration
 - Animals and Food
 - Reactions in Animals
- Lesson Reviews and Discussion Board
- Project: Matter and Energy Model—Animals
- Checkpoints 16–19
- Unit 4 Exam

Unit 5: Photosynthesis

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Plants and Energy
 - Plant Growth
 - Gases and Growth
 - Plants and Gases

- Reactions in Plants
- Plant Nutrient Sources
- Photosynthetic Organisms
- Matter and Energy in Ecosystems
- Lesson Reviews and Discussion Board
- Project: Matter and Energy Model—Plants
- Checkpoints 21–24
- Final Exam Unit 1 Review
- Unit 5 Exam

Unit 6: Chemical Reactions in Industry

- Warm-Ups
- Big Questions
- Direct Instruction:
 - Synthetic Building Materials
 - Impacts of Synthetic Building Materials
 - Plastic as a Synthetic Material
 - Impacts of Plastic
- Lesson Reviews and Discussion Board
- Project: Impact of Aluminum
- Project: Impact of Aluminum Recycling
- Checkpoints 26–27
- Unit 6 Exam
- Final Exam Units 2–6 Reviews
- Final Exam