

6th Grade Science Syllabus

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Room: 124

Conference: 1st Period 8:00-8:48 AM

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Course Overview

This year-long course introduces students to fundamental scientific concepts through hands-on investigations, critical thinking, and real-world connections. Students will explore Earth science, life science, and physical science while developing essential scientific skills and practices aligned with Texas Essential Knowledge and Skills (TEKS).

Course Goals

Students will develop scientific literacy by learning to observe, question, investigate, analyze data, and communicate findings. They will understand how science connects to their daily lives and build confidence in their ability to think like scientists.

Introduction to Scientific Thinking

TEKS Covered: 6.1 (Scientific and Engineering Practices), 6.2 (Data Analysis), 6.3 (Communication)

- The scientific method and inquiry process
- Making observations and asking testable questions
- Designing fair tests and controlled experiments
- Using scientific tools and measurement
- Recording data and drawing conclusions
- Science safety in the laboratory

Unit 1: Investigating Matter and Density

TEKS Covered: 6.6.A, 6.6.B, 6.6.D (Matter properties), 6.2.D (Experimental design evaluation)

- Physical vs. chemical properties of matter
- States of matter and phase changes
- Density, mass, and volume relationships

- Comparing density of substances relative to various fluids
- Mixtures, solutions, and separation techniques
- Conservation of matter

Unit 2: Investigating Elements and Chemical Change

TEKS Covered: 6.6.C (Periodic table elements), 6.6.E (Chemical changes)

- Identifying metals, nonmetals, metalloids, and rare earth elements
- Physical properties: luster, malleability, ductility, conductivity
- Importance of elements to modern life
- Evidence of chemical changes: gas formation, color change, thermal energy change, precipitate formation

Unit 3 : Investigating Force and Motion

TEKS Covered: 6.7.A, 6.7.B, 6.7.C (Forces and Newton's laws)

- Types of forces: gravity, friction, magnetism, applied, and normal forces
- Calculating net force using diagrams
- Balanced vs. unbalanced forces
- Newton's Third Law of Motion and simultaneous force pairs

Unit 4: Investigating Energy

TEKS Covered: 6.8.A, 6.8.B, 6.8.C (Energy types and conservation)

- Comparing potential energy types (gravitational, elastic, chemical) with kinetic energy
- Energy conservation through transfers and transformations
- Real-world energy systems: electrical circuits, food webs, amusement rides, photosynthesis
- Transverse and longitudinal wave energy transfer

Unit 5: Investigating the Solar System

TEKS Covered: 6.9.A, 6.9.B (Earth-Sun-Moon system)

- How Earth's tilt and revolution around the Sun causes seasons
- Modeling seasonal changes and uneven heating
- Ocean tides caused by gravitational forces
- Daily, spring, and neap tide cycles

Unit 6: Investigating Earth's Layers

TEKS Covered: 6.10.A, 6.10.B, 6.10.C (Earth's structure and rock cycle)

- Earth's spheres: biosphere, hydrosphere, atmosphere, and geosphere
- Layers of Earth: inner core, outer core, mantle, and crust
- Rock cycle and formation of metamorphic, igneous, and sedimentary rocks
- Geologic processes and their effects

Unit 7: Investigating Resource Management

TEKS Covered: 6.11.A, 6.11.B (Resource management and conservation)

- Importance of resource management for global challenges
- Reducing energy poverty, malnutrition, and pollution
- Conservation, efficiency, and technology in resource management
- Cost-benefit analysis of resource solutions

Unit 8: Investigating Ecosystems

TEKS Covered: 6.12.A, 6.12.B, 6.12.C (Ecosystem interactions and organization)

- Hierarchical organization: organism, population, community, ecosystem
- Dependence on biotic and abiotic factors
- Competition for limited resources
- Predatory, competitive, and symbiotic relationships (mutualism, parasitism, commensalism)

Unit 9: Investigating Organisms

TEKS Covered: 6.13.A, 6.13.B, 6.13.C (Cell theory and organism characteristics)

- Historical development of cell theory
- Prokaryotic vs. eukaryotic cells
- Unicellular vs. multicellular organisms
- Autotrophic vs. heterotrophic organisms
- Variation within populations and survival advantages/disadvantages

Assessment Methods

- Laboratory investigations and reports
- Performance assessments aligned with TEKS

- Unit tests covering content standards
- Project-based learning assignments
- Scientific argumentation and communication tasks
- Safety practices evaluation

Materials and Resources

- Laboratory equipment and safety gear
- Microscopes and specimens
- Models for Earth systems and cellular structures
- Digital resources and simulations
- Scientific calculators
- TEKS-aligned textbook and supplementary materials

Safety Policy

Students must demonstrate proper safety procedures before participating in laboratory activities. All investigations follow Texas Education Agency-approved safety standards as outlined in TEKS 6.1.C.

TEKS Integration

This course ensures that students spend at least 40% of instructional time engaged in hands-on scientific and engineering practices (TEKS 6.1) while building understanding across all content standards. Regular connections are made between scientific concepts and their real-world applications, preparing students for advanced science courses and STEM careers.