

7th Grade Science Syllabus

School: Smoky Mountain Elementary School

Teacher: Mrs. Gilland

Room: E131

School Year: 2026 - 2027

Course Description

Welcome to 7th Grade Science! In this course, we will explore fundamental concepts in physical science, life science, and Earth science as outlined by the Tennessee Academic Standards for Science. Our journey will cover everything from the interactions of matter and energy to the intricate workings of cells and ecosystems. We will engage in hands-on investigations, critical thinking, and collaborative projects to develop a deeper understanding of the world around us.

Course Goals

Students will:

- Develop and use models to explain scientific phenomena.
- Plan and carry out investigations to gather evidence.
- Analyze and interpret data to draw conclusions.
- Engage in arguments from evidence to support scientific explanations.
- Integrate science, mathematics, technology, and engineering to solve problems.

Units of Study and Tennessee State Standards

This course is structured around the following core units, each aligned with specific Tennessee State Standards.

1st 9 Weeks

Unit 1: Matter and Its Interactions (Physical Science)

- **7.PS1.1** Evaluate and communicate information that all substances in the universe are made of many different types of atoms that combine in various ways.
- **7.PS1.2** Collect and analyze data about the physical properties of the components of a mixture to use as evidence that the identities of the components change during a chemical reaction.
- **7.PS1.3** Develop a model to explain how changes to a system can be explained by

changes in temperature and/or pressure and the effect of those changes on particle motion and/or spatial arrangement.

- **7.PS1.4** Use computational thinking to demonstrate that all atoms in the reactants are present in the products of a chemical reaction supporting the Law of Conservation of Mass.

Unit 2: Energy (Physical Science)

- **7.PS3.1** Plan and carry out an investigation to demonstrate that the interaction between substances can cause chemical reactions that release or store energy.
- **7.PS3.2** Develop a model to explain how food is utilized through chemical reactions to form new molecules that support growth, resulting in the release of energy as matter moves through an organism.

2nd 9 Weeks

Unit 3: From Molecules to Organisms: Structures and Processes (Life Science)

- **7.LS1.1** Develop models that identify and explain the structure and function of major cell organelles and structures as they contribute to the life activities within a system.
- **7.LS1.2** Obtain information about the cellular structures of unicellular and multicellular organisms across kingdoms and domains in order to compare how these structures support the functions of the organism.
- **7.LS1.3** Develop and use a hierarchical model of a multicellular organism to explain that the body of humans and other animals is a system of multiple interacting subsystems specialized for particular body functions {e.g. digestion, respiration, excretion, circulation, sensation (nervous and integumentary), locomotion (musculoskeletal), reproduction, and immunity.}
- **7.LS1.5** Obtain and communicate information to provide evidence that illustrates the causal relationships between information received by sensory receptors and behavior, both immediate and over longer time scales.

3rd 9 Weeks

- **7.LS1.4** Analyze data to determine the effect of genetic factors and environmental factors that influence the growth of plants and animals.
- **7.LS1.6** Develop and use a model (e.g. Punnett Squares, diagrams, simulations) as evidence to demonstrate why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
- **7.LS1.7** Develop a model using evidence that explains the process of photosynthesis, cellular respiration, and anaerobic respiration in the cycling of

matter and flow of energy into and out of organisms.

Unit 4: Ecosystems: Interactions, Energy, and Dynamics (Life Science)

- **7.LS2.1** Develop a model to depict the cycling of matter, including carbon and oxygen, and the flow of energy among biotic and abiotic parts of an ecosystem.

Unit 5: Heredity: Inheritance and Variation of Traits (Life Science)

- **7.LS3.1** Evaluate and communicate information that chromosomes contain many distinct genes which code for the production of proteins, impacting the traits of an individual.
- **7.LS3.2** Construct an explanation to describe how the impact of changes to genes (i.e. mutations) located on chromosomes may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- **7.LS3.3** Predict the probability of individual dominant and recessive alleles to be transmitted from each parent to offspring during sexual reproduction and represent the phenotypic and genotypic patterns using ratios.
- **7.ETS1.1** Examine a problem from the medical field (e.g. prosthetic limbs, organ transplants) and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

4th 9 Weeks

During this time we will be practicing for the TCAP Test which will be given April 12th - 30th. We will have 3 weeks left after TCAP at which time we will be doing STEM Activities.

Case Benchmark Testing:

1st Test - Oct. 1st - Oct.9th

2nd Test - Dec. 9th - Dec. 17th

3rd Test - March 2nd - March 12th

Grading Policy

- **90-100 A**

- 80-89 B
- 70-79 C
- 60-69 D
- Below 59 F

Grades will be taken on the following:

- Mastery Connect Test
- Edulastic Spiral Review
- Study Island Practice Sessions

Classroom Expectations

- **Be Respectful:** Treat your classmates, your teacher, and the classroom with respect.
- **Be Responsible:** Come to class prepared with all necessary materials and be on time.
- **Be Engaged:** Participate actively in discussions and activities. Ask questions and share your ideas.

Materials Needed

* Notebook specifically for science

- Pencil
- Loose-leaf paper
- Optional: Colored pencils or markers

This syllabus is subject to change at the teacher's discretion.