

PHYSICAL SCIENCE

CREDIT 1 **GRADE** 10, 11 **PREREQUISITE** NONE

Physical science, which explores the relationship between matter and energy, provides a basic foundation for advanced studies in chemistry and physics. Major concepts include forces and motion, structure of matter, chemical and physical properties of matter, and the interactions of matter and energy. **NOTE: This course is required for graduation.**

State Standards for Physical Science may be found here:

<https://www.tn.gov/education/article/science-standards>

Embedded Standards

Embedded standards are skills and processes used in the real work of science and support and enhance classroom instruction.

- Select a description or scenario that reevaluates and/or extends a scientific finding.
- Analyze the components of a properly designed scientific investigation.
- Determine appropriate tools to gather precise and accurate data.
- Evaluate the accuracy and precision of data.
- Defend a conclusion based on scientific evidence.
- Determine why a conclusion is free of bias.
- Compare conclusions that offer different but acceptable explanations for the same set of experimental data.
- Distinguish among tools and procedures best suited to conduct a specified scientific inquiry.
- Evaluate a protocol to determine the degree to which an engineering design process was successfully applied.
- Evaluate the overall benefit to cost ratio of a new technology.
- Use design principles to determine if a new technology will improve the quality of life for an intended audience.
- Use concepts of length, area, and volume to estimate and solve real-world problems.

First Nine Weeks

- Explore matter in terms of its physical and chemical properties.
- Describe the structure and arrangement of atomic particles.
- Characterize and classify elements based on their atomic structure.
- Investigate chemical and physical changes.
- Evaluate pure substances and mixtures.
- Distinguish between common ionic and covalent compounds.
- Construct chemical formulas for common compounds.
- Apply the Laws of Conservation of Mass/Energy to balance chemical equations.

Common Formative Assessment # 1

Common Formative Assessment # 2

Common Formative Assessment # 3

Second Nine Weeks

- Investigate relationships among the pressure, temperature, and volume of gases and liquids.
- Distinguish among acids, bases, and neutral substances.
- Apply indicators and instruments to classify a material as acidic, basic, or neutral.
- Conduct research on issues associated with acid rain.
- Observe and measure temperature changes to distinguish between endothermic and exothermic reactions.
- Investigate the properties and behaviors of mechanical and electromagnetic waves.
- Explore and explain the nature of sound and light energy.
- Examine the applications and effects of heat energy.
- Design and conduct an activity to demonstrate the conservation of heat energy during temperature changes.
- Probe the fundamental principles and applications of electricity.
- Distinguish between nuclear fission and nuclear fusion.
- Research the importance of energy conservation.
- Investigate the relationships among speed, position, time, velocity, and acceleration.
- Investigate and apply Newton's three laws of motion.
- Examine the Law of Conservation of Momentum in real world situations.
- Demonstrate the relationships among work, power, and machines.
- Explore and explain the nature of sound and light energy.
- Investigate the properties and behaviors of mechanical and electromagnetic waves.
- Explore the difference between mass and weight.
- Relate gravitational force to mass.
- Demonstrate the relationship among work, power, and machines.

Common Formative Assessment # 4

Common Formative Assessment # 5

Common Formative Assessment # 6

For information regarding instructional objectives and materials, please contact the school principal.

* Common assessments are scheduled within the nine weeks. Each school may adjust the week and/or day of the week to meet the individual school's schedule.

*Common assessments may be rescheduled due to inclement weather.