



Course Description
In 6th grade Science, we study all of the fields of science: Earth Science (including astronomy), biology, engineering/technology, and physical science, all with the goal of relating structure and function in the workings of the world around them. Students have many hands-on opportunities with natural phenomena and design problems highlighting the relationship of structure and function in the world. They study methods of scientific inquiry, including the Scientific Method; they develop an understanding of Newton’s Laws and the Engineering Design Process when building water rockets in the fall and bridges in the spring. They explore the solar system, Milky Way and universe and how gravity affects each; they discover the long geologic timeline of Earth, and create models of plate tectonics and seafloor spreading, analyzing the causes of earthquakes and volcanic eruptions. They create models of plant and animal cells, investigate the interaction of human body systems, and explore biologic evolution. They describe the interactions between mass, volume, and density, measuring and calculating them, and investigate mixtures and pure substances. They use models to illustrate the properties of waves, how they move, and list their parts. In grade 6, student scientists develop and use these skills: ▪ Ask scientific questions and define problems informed by their curiosity, models and theories. ▪ Develop and carry out investigations (setting a goal, predicting outcomes through their hypothesis, conducting the investigations, recording the data, and studying the data to draw conclusions). ▪ Analyze and interpret data using mathematical skills and identifying patterns. ▪ Communicate evidence (explaining reasoning and defending their viewpoint through citing evidence for claims made to persuade others of their thinking).
Content Standards
<u>Grade 6 Massachusetts Curriculum Framework - Science</u>



Subject: 6th Grade Science

Units	Essential Questions	Key Activities May Include:
TERM 1 Intro to Science/Scientific Thinking	- How are the steps of the Scientific Method used to answer scientific questions? - How are data tables used to gather, interpret, and display data?	- John's Bread Powerpoint. - Simpson's Packet. - Data Table Group Project.
EngineeringDesign/Rockets MA Standards: 6.MS-ETS1	- What lesson can Newton's Laws teach us in engineering design of a rocket? - What method do we use to plan, construct, and test a prototype? - How do you ensure a successful solution of a design problem using criteria and constraints?	- Rocket Packet. - Engineering Design Process activity. - Rocket building and testing.
Earth & Space Science Earth's Place in the Universe MA Standards: 6.MS-ESS1 6.MS-PS2	- What causes lunar and solar eclipses of the Sun and Moon? - What evidence supports that gravitational forces are attracted and only noticeable when there is a very large mass? - How does the Earth and solar system fit within our understanding of billions of galaxies in the universe?	- Phases Around the Room activity. - Moon Coin Activity. - Moon on a Stick. - Apollo 13 movie & Quick-Write. - Planet Project. - Expanding the Universe group activity.
TERM 2 Earth Systems MA Standards: 6.MS-ESS2	- How do index fossils and rock layers help us determine the relative ages of rock formations? - What evidence supports that continental drift, seafloor spreading, and plates colliding, separating, and transforming has happened and is still happening?	- Geologic Time Scale Lab. - Law of Superposition and Radiometric Dating investigation. - Continental Drift Theory packet. - Pangaea Map. - Defending Your Viewpoint writing assignment. - Seafloor Spreading Moving Model. - Plate Tectonics in Action! play.



Units	Essential Questions	Key Activities May Include:
Life Science From Molecules to Organisms MA Standards: 6.MS-LS1 Biological Evolution MA Standards: 6.MS-LS4	- What is the evidence that all organisms (unicellular & multicellular) are made up of cells? - How can you use a model to describe how parts of a cell contribute to the cellular functions? - What evidence can be used to explain that body systems interact to carry out essential functions of life? - How is the fossil record evidence of biological evolution? - How do anatomical structures support evolutionary relationships among & between fossils and modern organisms?	“Wacky History of Cell Theory” video activity. - Living Vs. Non-Living Lab. - Plant Vs. Animal Cells Lab. - Cell City poster project. - Cell Theory and Biological Levels of Organization. - Science Shorts Body Systems activity. “It’s all Connected” writing assignment. - Human Body Model Project. - BrainPop videos and quizzes. - Fossil Record Online. - A-Z Animals activity. - Darwin’s Finches read and write.
TERM 3 Engineering MA Standards: 6.MS-ETS1	- How do you ensure a successful solution of a design problem using criteria and constraints? - What tools do you choose to safely construct a prototype?	- PBS “Building Bridges” activity. - PBS Bridge Webquest. - Bridge Spec Sheet. - Craggy Rock Bridges activity. - Loads Lab.
Physical Science Matter and Its Interactions MA Standards: 6.MS-PS1 6.MS-PS4	- How can you use a particle model of matter to explain and compare the densities of different materials? - How can mixtures of pure substances be separated by physical means?	- Measuring Matter Video. - Brainpop video and quizzes. - Density and Matter activity. - Density of Solid Objects Lab. - Mixtures and Pure Substances Lab.
Waves MA Standards: 6.MS-PS4	- How can we use models to show that light rays and mechanical waves are reflected, absorbed, and transmitted through various materials? - How do we understand the parts of a wave and what each term represents?	- Slinky/Rope Wave Lab. - Waves are Reflected, Absorbed, and Transmitted activities. 3D Waves Model. - Anatomy of a Wave Activity.