SCIENCE

6th GRADE

Environmental Science

The students will:

- Understand populations and communities.
- Explain living and nonliving resources.
- Identify earth's ecosystems and biomes.
- Relate to development standpoints.
- Analyze their ecological footprint.
- Identify different methods of conserving resourses.

Astronomy

The students will:

- Evaluate the main characteristics of the stars, planets and their satellites.
- Identify theories how the sun and the planets formed.
- Understand a spectroscope.
- Demonstrate the revolution of the moon to its various phases.
- Differentiate between solar and lunar eclipses.
- Understand forces which maintain an orbit.
- Analyze planetary revolution and rotation.
- Understand the principles by which rockets work.
- Evaluate the various kinds of artificial satellites and how they are used.
- Understand our universe is constantly expanding.
- Understand the formation theories of the universe, galaxies and stars.

Geology

The students will:

- Identify the skills, tools and responsibilities of geologist, seismologist, astronomer and paleontologist.
- Compare and contrast constructive forces and destructive forces.
- Evaluate cause and effect of plate tectonics.
- Identify ways to reduce earthquake hazards.
- Evaluate the causes and effects of volcanic regions.
- Analyze significant characteristics of rocks.
- Analyze the affects of weathering.
- Analyze different periods of geologic history.

Hydrosphere

The students will:

- Identify the major features of the ocean floor.
- Understand the relationships between currents, climate and air.
- Understand the characteristics and causes of waves and tides.
- Analyze the types of and use of the instruments used for oceanographic exploration.
- Analyze all components of the ocean.
- Evaluate the sources, changes and characteristics of rivers, pond, lakes and wetlands.
- Evaluate the forces of water: hydroelectric power, erosion deposition, drought and glaciers.
- Demonstrate the diversity of biology in different waters.

Meteorology

The students will:

- Understand the composition of the four main layers of the Earth's atmosphere.
- Analyze how the earth's atmosphere, becomes heated by the energy from the sun.
- Understand the instruments used to measure air pressure and temperature.
- Explain the similarities and differences of heat and temperature.
- Analyze the relationship between air pressure and the density of the air.
- Explain the similarities and differences of heat and temperature.
- Understand the difference in the rate of absorption and radiation by different surfaces.
- Apply the various methods of heat transfer.
- Analyze the relationship between the terms humidity and relative humidity.
- Know four types of precipitation.
- Understand the instruments used to measure relative humidity and precipitation.
- Explain how instruments are used to measure wind speed and direction.
- Analyze how meteorologists interpret weather data to make their forecasts.
- Analyze how a weather front forms.
- Evaluate how a temperature inversion affects air quality.
- Explain how acid rain develops.
- Analyze affect of oceans on climate.

7th Grade

From Bacteria to Plants

The students will:

- Conduct and design an experiment.
- Deeply understand cell theory.
- Identify different types of bacteria.
- Analyze the processes of a virus.
- Identify the characteristics of living and non-living things.

- Analyze the different forms of protests.
- Understand that all living things are composed of cells.
- Evaluate a taxonomic key.
- Identify the characteristics of the three categories of protest; animal-like, fungus-like, plant-like.
- Analyze data demonstrating that living things are interconnected.
- Identify the characteristics for fungi.
- Identify the characteristics of vascular and non-vascular plants.
- Identify the different parts of seed plants.
- Identify the differences between gymnosperms and angiosperms.
- Understand the importance of plants to the living world.

Animals

The students will:

- Understand the commonalities of all animals.
- Identify invertebrate autonomy and understand the earthly roles of sponges, cnidarians, mollusks, arthropods, and echinoderms.
- Identify vertebrate autonomy and understand the earthly roles of fishes, amphibians, reptiles, birds, and mammals.
- Analyze typical animal behavior.
- Understand embryonic development of vertebrates.

Human Biology

The students will:

- Identify the components of wellness.
- Demonstrate decisions that promote good health.
- Identify nutrients needed to maintain a healthy body.
- Understand the functions of water in the body.
- Interpret the food pyramid to identify examples of a balanced healthy diet.
- Understand homeostasis and its importance in the human body.
- Explain each organ system of the human body.
- Explain the inter-relationships of the body's systems.

Heredity

The students will:

- Relate Mendel's work to the development of the law of genetics.
- Understand the function of chromosomes.
- Understand how a mutation can cause a helpful or a harmful change.
- Analyze the structure of a DNA molecule.
- Compare and contrast DNA and RNA.
- Analyze how human traits are inherited.
- Identify the purpose of sex chromosomes.

- Relate the sex chromosomes to sex-linked traits.
- Define genetic engineering.
- Identify how genetic engineering has contributed to medicine and agriculture.

8th GRADE

Chemical Building Blocks & Chemical Reactions

The students will:

- Demonstrate an understanding of the concepts of mass, volume and density.
- Explain physical and chemical properties and the difference between the two as well as know examples of each.
- Demonstrate an understanding of elements, compounds, mixtures and molecules and know examples of each.
- Explain the location, mass and charge of protons, neutrons and electrons.
- Use the periodic table to obtain the atomic mass and the atomic numbers of selected elements on the table.
- Identify carbon chemical bonding.
- Identify parts of the atomic structure of ionic and covalent bonds in compounds.
- Identify characteristics of chemical change.
- Compare properties of a variety of mixtures and solutions.
- Compare different polymers.
- Balance chemical equations.
- Draw Lewis structures.
- Draw chemical formulas.
- Use the periodic table.

Motion, Forces and Energy

The students will:

- Explain and use the concepts of speed, velocity, acceleration and momentum to describe motion.
- Explain and identify forces with an emphasis on the forces of friction and gravity.
- State and give examples of Laws of Motion.
- Classify energy into different types.
- Explain the difference between potential and kinetic energy.
- Describe various forms of energy including; heat, light, sound, chemical, nuclear mechanical, and electrical.
- Explain how energy can be changed from one form to another.
- Analyze how “work” is done.

Transfer of Energy

The students will:

- Understand wave motion using the concepts of amplitude, wavelength, and reflection.
- Explain Doppler Effect.
- Identify how speed of light changes in different mediums.
- Understand the concept of luminous, illuminated, opaque, translucent and transparent.
- Apply a metric thermometer to measure temperature.
- Identify causes and affects of matter changing states.
- Analyze the effects of insulation.
- Evaluate uses of heat energy.