4-H School Enrichment Program

Fayette County 4-H is partnering with Fayette County schools to enrich the classroom experience by offering hands-on science lessons. Lessons are taught by University of Georgia 4-H Staff and are currently aligned to the Georgia Standards of Excellence.

Monthly Enrichment Programs last approximately 45 minutes to one hour and are accompanied by developing skills in leadership, public speaking, and critical thinking. Lessons include topics related to science that follow the same standards and schedule taught in the classroom.

4th Grade Science Curriculum Lesson Descriptions:

- **Oh Deer**

Description: Students will identify the essential elements to life, factors that influence carrying capacity, define limiting factors, and recognize that fluctuations in wildlife populations are natural and necessary for our ecological systems all though a fun discussion and tag game called "Oh Deer."

Standards: **S4L1:** Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem

- **Farm Board Game**

Description: Using a board game, students will identify producers, consumers, and predators on a farm. They will be able to experience the challenges of living as each as they see how energy flows through the ecosystem. They will also learn about agriculture in Georgia and where their food comes from.

Standards: **S4L1:** Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem

- **Incredible Journey**

Description: By putting themselves in the metaphorical shoes of a water droplet, students will have the chance to see how each water drop has its own unique journey. This activity is meant to allow students the opportunity to discover all the incredible places that water can go throughout the various stages of the water cycle and how it gets there.

Standards: **S4E2:** Obtain, evaluate, and communicate information to demonstrate the water cycle.

- **Weather/ Clouds in a Bottle**

Description: This lesson discusses weather and climate, including the instruments scientists use to observe and predict changes. It introduces the concepts of tracking, charting, and predicting weather changes. Clouds and cloud formation are discussed. The students conduct clouds in a bottle experiment.

Standards: **S4E4.** Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data.

- **Modeling of the Solar System**

Description: In this lesson, students will learn about the challenges of modeling the solar system accurately by looking at models and making their own. Students will observe models of the solar system and evaluate their strengths and limitations. Students will create a model of the solar system accurate for relative distance between planets or for relative size.

Standards: **S4E1.** Obtain, evaluate, and communicate information to compare the physical attributes of stars and planets.

- **Model of the Sun, Moon, and Earth**

Description: By creating a movable model of the Sun, Moon, and Earth, students explore how the motion of the Earth around the Sun and the Moon around the Earth create our days and years and how the earth's tilt creates the changing of the seasons. Through their models, they can also explore why the moon changes phases and demonstrate distinct phases using them.

Standards: **S4E2:** Obtain, evaluate, and communicate information to model the effects of the position and motion of the Earth and the moon in relation to the sun as observed from the Earth.

- **Modeling the Earth-Moon-Sun System, the Moon Phases, and the Seasons**

Description: In this lesson, students will create an Earth-Moon-Sun classroom model and use it to understand the Earth-Moon-Sun system, the moon phases, and the seasons. Students will understand how the Earth-Moon-Sun system works, with the Moon orbiting the Earth while the Earth orbits the Sun. Students will model the phases of the Moon. Students will use a model to understand how the length of day changes throughout the year, resulting in our seasons.

Standards: **S4E2:** Obtain, evaluate, and communicate information to model the effects of the position and motion of the Earth and the moon in relation to the sun as observed from the Earth.

- **What' the Buzz?**

Description: In this lesson, students explore sound waves and how varied materials that sound waves vibrate can cause different volume and pitch. Students are given an empty toilet paper roll and rotate between attaching several types of materials to the end of the roll to create a kazoo. They explore how the thickness of the material (aluminum foil, parchment paper, and saran wrap) affects how it vibrates, and how that can change the pitch and volume of the sound made by the kazoo.

Standards: **S4P2:** Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate.

- **Simple Catapults**

Description: During this activity, students explore how energy is transformed from one form to another within a system. Students explore the engineering design process by planning, building, testing, and improving on their creations. Students are given a reference picture and they work in groups to assemble a catapult with materials provided to them and determine how adjustments can be made to affect the distance the projectile (mini pom pom) is launched.

Standards: **S4P3:** Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.

- **Light Lesson**

Description: In this lesson, students will investigate three different stations that help them understand the characteristics of light and how it interacts with various objects. They will see how light interacts with varied materials and classify each material as either opaque, translucent, or transparent. They will also explore using mirrors to reflect light at different angles, and shine light through a prism and a glass of water to show how light can be refracted.

Standards: **S4P1:** Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects.

5th Grade Science Curriculum Lesson Descriptions:

- **Intro to 4-H**

Description: Typically done at the first monthly meeting in August or September. Students gain an overview of the 4-H programs and lessons for the year.

- **The Microorganism Mysteries**

Description: Students will be able to identify examples of beneficial microorganisms and harmful microorganisms and explain how each can affect larger organisms. After participating in this lesson, the learner will: define microbiology, microorganisms/microbe, microbiome bacteria, fungi, virus**;** describe how microorganisms are studied; identify examples of beneficial microorganisms and harmful microorganisms, and explain both the positive and negative effects that microorganisms can have on larger organisms

Standards: **S5L4:** Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms.

- **Microorganisms – Mean, Miserable, Menacing Microbes**

Description: Students will be introduced to microorganisms through a simulation of how germs spread, making real life connections with how easily microorganisms can be transferred. Students will also discover the harmful effect of microorganisms if proper hand-washing techniques and food preparation are not followed.

Standards: **S5L4:** Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms.

- **Inherited Traits**

Description: An interactive lesson designed to give students an opportunity to communicate inherited and acquired characteristics. Students will explore the topics of inherited traits, learned behaviors, and instinct. Students will work in a group to create their own "monster" and be able to communicate the differences between these concepts.

Standards: **S5L2:** Obtain, evaluate, and communicate information showing that some characteristics of organisms are inherited, and other characteristics are acquired.

- **Physical and Chemical Changes**

Description: In this lesson, students perform 4 tests, recognizing characteristics of physical or chemical changes to determine what type of change each test undergoes, they practice following instructions and recording basic scientific observations.

Standards: **S5P1:** Obtain, evaluate, and communicate information to explain the differences between a physical change and a chemical change.

- **Constructive and Destructive Forces**

Description: This lesson is an interactive game where students determine if a force is constructive or destructive. Correct answers allow students to advance their game piece closer to the goal. Students practice identifying differences between constructive and destructive forces and using information given to determine which type of force an event is based on the outcome. Students will also simulate a constructive and destructive forces by creating their own sand dune and testing it against wind and rain (blowing through a straw and using a spray bottle)

Standards: **S5E1:** Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.

- **Beach in a Bag**

Description: In this lesson, students learn the difference between constructive and destructive forces and their effects on Georgia's barrier islands. Youth will use various materials to make their own coastal land plot and demonstrate the importance of sand dunes to coastal communities.

Standards: **S5E1.** Construct an argument supported by scientific evidence to identify surface features as being caused by constructive or deconstructive processes.

- **Electricity and magnetism**

Description: In this lesson, students work in groups and are given materials to create their own circuits and explore electricity and magnetism through. They are given examples of simple circuits, parallel circuits, and electromagnets and asked to recreate them and add on other parts of circuits. Through this, they can explore how we use circuits in our everyday lives by adding switches, lights, and motors to their circuits.

Standards: **S5P2:** Obtain, evaluate, and communicate information to investigate electricity.
S5P3: Obtain, evaluate, and communicate information about magnetism and its relationship to electricity.

- **Poison Pump**

Description: A killer has swept the streets of London and students are tasked with determining the source of this deadly disease! Through investigation and critical thinking, students are asked to determine how a city in London has been infected by Cholera. They are given a map and sets of clues to help them determine the source of the disease and asked to present their findings. Students gain experience analyzing and interpreting data (clues), leading them to understand that water is a shared resource and can spread diseases.

Standards: **S5L4:** Obtain, evaluate, and communicate information about how microorganisms benefit or harm larger organisms.