Christ the Teacher CATHOLIC SCHOOL

K-8th Grade Continuum of Learning

Science	K-5 In Homeroom Class, MS with Mrs. Haas
Standards: MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures. MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	
Key Idea: Structure and Properties of Matter	
Activities: a.) Gumdrop Atoms b.) Particle Dance	
Standards: MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	
Key Idea: Chemical Reactions	
Activities: a.) Sourdough Starter (Observation Log) b.) Coke and Mentos c.) Elephant Toothpaste d.) Exploding Baggies	
Standards: MS-PS2-1. Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects; i.e. the impact of collisions between two cars. MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. MS-PS2-2. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object; i.e. balanced vs. unbalanced forces.	
Key Idea: Forces and Interactions	
Activities: a.) Marble Maze b.) Paper Plate Marble Run c.) Paper Coaster d.) Sinking ships	

Standards:
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

Key Idea: Energy

Activities:
a.) Homemade Thermometer
b.) Solar Ovens: Cookies

Standards:
MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

Key Idea: Waves and Electromagnetic Radiation

Activities:
a.) Exploring Light: Stations
b.) Voice Recording Analog vs. Digital Signals

Standards:
MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Key Idea: Matter and Energy in Organisms and Ecosystems

Activities:
a.) Spinach Experiment
b.) Photosynthesis Models
c.) Photosynthesis Relay Game
d.) STEM Soil Erosion

e.) Ecosystems

Standards:
MS-LS3-2. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
MS-LS4-5. Gather and synthesize information about technologies that have changed the way humans influence the inheritance of desired traits in organisms.

Key Idea: Growth, Development, and Reproduction of Organisms

Activities:
a.) Genetically Modified Food
b.) Interactive Fossil Notebook
c.) Battle of the Beaks
d.) Cereal Reproduction

Standards:
MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.

Key Idea: Space System

Activities:
a.) Human Sundial
b.) Great Escape Water Balloons
c.) Scale Model Solar System

Standards:
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

Key Idea: History of Earth

Activities:
a.) The Rockies (ever-changing Earth)
b.) Creating Your Own Pangaea Project

c.) Paleo-Sleuths
Standards: MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
Key Idea: Earth's Systems
Activities: a.) I Can't Take the Pressure Project
Standards: MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. MS-ESS3-2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
Key Idea: Weather and Climate
Activities: a.) Climate Change and Sea Creatures b.) Earthquake Proof Structure c.) Natural Disaster Technology
Standards: MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
Key Idea: Human Impact
Activities: a.) Natural Disaster Technology b.) Environmental Degredation and Solutions c.) Earthquake Proof Structures
Technology
Standards: 5.c. Students break down problems into smaller parts, identify key information and propose solutions. 5.a. Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
Coding
Activities: a.) code.org b.) Coding Unplugged c.) Coding Board Game d.) Scratch Jr. e.) Kodable
Standards:

2.a. Students practice responsible use of technology through teacher-guided online activities and interactions to understand how the digital space impacts their life.
2.b. With guidance from an educator, students understand how to be careful when using devices and how to be safe online, follow safety rules when using the internet and collaborate with others.
2.c. With guidance from an educator, students learn about ownership and sharing of information, and how to respect the work of others
2.d. With guidance from an educator, students demonstrate an understanding that technology is all around them and the importance of keeping their information private.

Digital Citizenship

Activities:
a.) commonsense.org

Standards:

Robotics

Activities:
a.) Constructing robots
b.) Coding robots
c.) Obstacle Course Challenge

Engineering

Standards:
4.a. Students explore and practice how a design process works to generate ideas, consider solutions, plan to solve a problem or create innovative products that are shared with others.

4.c. Students engage in a cyclical design process to develop prototypes and reflect on the role that trial and error plays.

4.d. Students demonstrate perseverance when working with open-ended problems.

Engineer Design Process

Activities:
a.) Simple Machines

Bridges

Activities:
a.) Index Card Bridge (Penny Challenge)
b.) Small Popsicle Stick Bridge (50 craft sticks)
c.) Large Popsicle Stick Bridge (100 craft sticks)
d.) Lego Bridges (Kinder)

Towers

Activities:
a.) Marshmallow Challenge
b.) Craft Stick/Clothespin Challenge

c.) Index Card Challenge d.) Lego Towers (Kinder)
Design a Solution to a Complex Real-World Problem
Activities: a.) Design and Create a Prosthetic Hand b.) Prosthetic Hand Challenge
Math will be taught in homeroom classrooms.