City of Seminole Recreation

HOMESCHOOL S.T.E.A.M. CURRICULUM 25-26

Month 1: Introduction to STEAM + The Scientific Method

Week 1: What is STEAM?

Activity 1: STEAM Scavenger Hunt

- **Instructions**: Hide STEAM-related items or pictures (e.g., a ruler for Math, paintbrush for Art) around the room. Students work in teams to find and identify each.
- **Supplies**: Pictures/objects representing Science, Technology, Engineering, Art, Math; baskets; clue cards.

Activity 2: Marshmallow Tower Team Challenge

- **Instructions**: In groups, students build the tallest freestanding structure using spaghetti and marshmallows.
- **Supplies**: Dry spaghetti, mini marshmallows, tape, string, ruler.

Week 2: Scientific Method Experiments

Activity 1: Sink or Float

- **Instructions**: Students make predictions, test various objects in water, and record results using the scientific method.
- **Supplies**: Tub of water, various small objects (coin, sponge, rubber ball, paperclip), worksheet.

Activity 2: Dancing Raisins Experiment

- **Instructions**: Drop raisins in soda water and observe reactions, following steps of the scientific method.
- **Supplies**: Clear cups, soda water, raisins, scientific method worksheet.

Week 3: Measurement Mania

Activity 1: Non-Standard Measurement Stations

- **Instructions**: Measure classroom items using blocks, hand spans, paper clips.
- **Supplies**: Blocks, paper clips, string, measurement charts.

Activity 2: Measuring with Standard Tools

- **Instructions**: Measure items using rulers, measuring tapes, scales, and compare results.
- **Supplies**: Rulers, measuring tapes, scales, everyday classroom objects.

Week 4: Art & Observation

Activity 1: Nature Journaling Walk

- **Instructions**: Take students outside to observe and draw a plant, insect, or tree like a scientist.
- **Supplies**: Clipboards, sketch paper, colored pencils, magnifying glasses.

Activity 2: Microscope Art

- **Instructions**: Observe simple specimens under a magnifier or microscope, then create abstract art from what they see.
- **Supplies**: Microscope/magnifiers, onion skins/leaves, watercolor or crayons.

Month 2: Weather Wonders

Week 1: Cloud Types & Weather Instruments

Activity 1: Cotton Ball Cloud Craft

- **Instructions**: Teach cloud types (cumulus, stratus, cirrus, nimbus) and have students create cloud models with cotton balls.
- **Supplies**: Cotton balls, blue paper, glue, markers.

Activity 2: Create a DIY Weather Station

- **Instructions**: Groups build parts of a weather station (thermometer, barometer, anemometer).
- **Supplies**: Plastic cups, straws, rulers, paper, tape, thermometer printouts.

Week 2: Water Cycle in a Bag

Activity 1: Water Cycle in a Bag

- **Instructions**: Draw the water cycle on plastic bags, add water and food coloring, tape to windows, and observe.
- **Supplies**: Ziplock bags, blue food coloring, permanent markers, tape.

Activity 2: Water Cycle Wheel

- **Instructions**: Create rotating wheels showing evaporation, condensation, precipitation, and collection.
- **Supplies**: Printable water cycle wheel template, brads, crayons, scissors.

Week 3: Build a Wind Vane & Rain Gauge

Activity 1: Make a Wind Vane

- **Instructions**: Use a straw, pencil, and paper to build a simple wind vane.
- **Supplies**: Straw, pencil with eraser, pin, paper, compass, cup with lid.

Activity 2: DIY Rain Gauge

- **Instructions**: Cut plastic bottles, mark measurements, and place outside to measure rainfall.
- **Supplies**: Clear plastic bottles, ruler, marker, stones (to weigh down).

Week 4: Weather-Inspired Art

Activity 1: Watercolor Storm Art

- **Instructions**: Use wet-on-wet watercolor technique to create stormy skies.
- **Supplies**: Watercolor paper, brushes, paint, water cups.

Activity 2: Tornado in a Jar

- **Instructions**: Create a vortex in a jar with water and dish soap to simulate a tornado.
- **Supplies**: Clear jars with lids, water, glitter, dish soap.

Month 3: Engineering Marvels

Week 1: Simple Machines

Activity 1: Build an Inclined Plane

- **Instructions**: Use cardboard ramps to test rolling objects.

- **Supplies**: Cardboard, tape, small toy cars, marbles.

Activity 2: Lever Launchers

- **Instructions**: Build a catapult using a spoon and popsicle sticks.
- **Supplies**: Plastic spoons, rubber bands, popsicle sticks, small pom-poms.

Week 2: Bridge Building Challenge

Activity 1: Spaghetti Bridge Challenge

- **Instructions**: Build bridges with uncooked spaghetti and tape; test with weights.
- **Supplies**: Spaghetti, tape, pennies, ruler.

Activity 2: Marshmallow Toothpick Bridges

- **Instructions**: Construct bridges using toothpicks and mini marshmallows.
- **Supplies**: Toothpicks, mini marshmallows, cardboard bases.

Week 3: Rube Goldberg Machines

Activity 1: Chain Reaction Machine

- **Instructions**: Create a machine that performs a simple task (e.g., ringing a bell).
- **Supplies**: Dominoes, ramps, string, small toys, cups, marbles.

Activity 2: Online Video Study + Design Sketch

- **Instructions**: Watch Rube Goldberg videos, then sketch out a design.
- **Supplies**: Laptop/tablet, paper, pencils.

Week 4: Dream Playground Design

Activity 1: Design a Playground Blueprint

- **Instructions**: Students draw their dream playground using basic shapes.
- **Supplies**: Graph paper, rulers, colored pencils.

Activity 2: 3D Model Playground

- **Instructions**: Use clay or cardboard to build playground models.
- **Supplies**: Clay, toothpicks, cardboard, glue, scissors.

Month 4: Coding & Computers

Week 1: Algorithms (Unplugged)

Activity 1: Robot Programming Game

- **Instructions**: One student gives step-by-step instructions; the other "robot" follows.
- **Supplies**: Masking tape for maze/grid, arrows on cards.

Activity 2: Make a PB&J Algorithm

- **Instructions**: Write instructions to make a sandwich, then act them out.
- **Supplies**: Bread, peanut butter, jelly, plastic knives (or draw it out).

Week 2: Scratch/ScratchJr Coding

Activity 1: Story Coding in Scratch

- **Instructions**: Create interactive stories in Scratch or ScratchJr.
- **Supplies**: Laptops/tablets, Scratch or ScratchJr installed.

Activity 2: Animate a Character

- **Instructions**: Use simple code blocks to animate a sprite.
- **Supplies**: Computers/tablets.

Week 3: Binary & Tech History

Activity 1: Binary Bracelets

- **Instructions**: Encode initials in binary using colored beads.
- **Supplies**: Beads, string, binary alphabet chart.

Activity 2: Tech Timeline

- **Instructions**: Make a visual timeline of computing innovations.
- **Supplies**: Printable images, glue, poster board, markers.

Week 4: Pixel Art

Activity 1: Graph Paper Pixel Art

- **Instructions**: Color in squares to design pixelated characters.
- **Supplies**: Graph paper, crayons or colored pencils.

Activity 2: Digital Pixel Art

- **Instructions**: Use a kid-friendly app (e.g., Pixie or PaintZ) to create digital art.
- **Supplies**: Tablets/laptops.

Month 5: Space Explorers

Week 1: Solar System Models

Activity 1: Clay Solar System

- **Instructions**: Model each planet to scale with playdough.
- **Supplies**: Clay/playdough, toothpicks, labels.

Activity 2: Planet Fact Cards

- **Instructions**: Create fact cards about each planet.
- **Supplies**: Index cards, markers, books/web resources.

Week 2: Moon Phases

Activity 1: Oreo Moon Phases

- **Instructions**: Twist Oreos to represent each moon phase.
- **Supplies**: Oreos, plastic knives, moon phase chart.

Activity 2: Moon Journal

- **Instructions**: Observe the moon daily and record shapes.
- **Supplies**: Journals, pencils, moon calendar.

Week 3: Rocket Design

Activity 1: Balloon Rockets

- **Instructions**: String a balloon across the room and see which design is fastest.
- **Supplies**: Balloons, string, straws, tape.

Activity 2: Straw Rockets

- **Instructions**: Create paper rockets and launch them using straws.
- **Supplies**: Paper, tape, scissors, straws.

Week 4: Galaxy Art

Activity 1: Pastel Galaxy

- **Instructions**: Blend pastels to create swirling galaxies.
- **Supplies**: Black paper, chalk pastels, tissues.

Activity 2: Salt & Watercolor Nebula

- **Instructions**: Paint with watercolors, then sprinkle salt for a starry texture.
- **Supplies**: Watercolor paper, salt, watercolor paints.

Month 6: Nature & Life Science

Week 1: Plant Dissection & Leaf Classification

Activity 1: Plant Dissection

- **Instructions**: Dissect a flower or plant to identify parts (stem, leaves, roots, petals).
- **Supplies**: Flowers/plants, magnifying glasses, tweezers, worksheets.

Activity 2: Leaf Hunt & Sorting

- **Instructions**: Collect leaves outdoors and sort them by shape, texture, and margin.
- **Supplies**: Collection bags, classification chart, paper, glue.

Week 2: Mini Greenhouses/Terrariums

Activity 1: Mini Greenhouse in a Cup

- **Instructions**: Plant seeds in a clear cup covered with plastic wrap.
- **Supplies**: Plastic cups, potting soil, seeds (beans/peas), water, plastic wrap.

Activity 2: Build a Terrarium

- **Instructions**: Create a mini self-contained ecosystem using a jar.
- **Supplies**: Glass jars, small rocks, charcoal, soil, small plants/moss.

Week 3: Life Cycles

Activity 1: Butterfly/Frog Life Cycle Wheel

- **Instructions**: Make a spinning life cycle wheel with labeled stages.
- **Supplies**: Printable templates, brads, crayons.

Activity 2: Life Cycle Diorama

- **Instructions**: Use a shoebox to create 3D scenes of each life stage.
- **Supplies**: Shoeboxes, modeling clay, paper, markers.

Week 4: Nature Collage

Activity 1: Nature Walk & Collection

- **Instructions**: Go on a nature walk to collect items for collage (leaves, twigs).
- **Supplies**: Bags, gloves (optional), observation sheets.

Activity 2: Create a Nature Collage

- **Instructions**: Arrange and glue collected materials into art inspired by nature.
- **Supplies**: Cardstock, glue, collected materials.

Month 7: Math in Motion

Week 1: Geometry Through Building

Activity 1: 2D Shape City

- **Instructions**: Use cutout paper shapes to build a cityscape.
- **Supplies**: Construction paper, scissors, glue, rulers.

Activity 2: Build 3D Shapes

- **Instructions**: Construct 3D shapes with toothpicks and clay or marshmallows.
- **Supplies**: Marshmallows/clay, toothpicks.

Week 2: Patterns in Nature

Activity 1: Fibonacci Spiral Art

- **Instructions**: Teach Fibonacci numbers and create a spiral using graph paper.
- **Supplies**: Graph paper, rulers, colored pencils.

Activity 2: Natural Patterns Photo Hunt

- **Instructions**: Search for and photograph repeating patterns in nature.
- **Supplies**: Cameras/tablets, checklist, printer (optional for display).

Week 3: Math Games & Puzzles

Activity 1: DIY Math Board Game

- **Instructions**: Groups design board games using math facts or logic.
- **Supplies**: Poster boards, dice, markers, index cards.

Activity 2: Tangram Puzzle Challenge

- **Instructions**: Create images using tangram pieces and solve shape challenges.
- **Supplies**: Tangram sets (paper or wood), templates.

Week 4: Symmetry in Art

Activity 1: Insect Symmetry Drawing

- **Instructions**: Students complete one half of a symmetrical insect.
- **Supplies**: Printed half-insect pages, colored pencils.

Activity 2: Mandala Creation

- **Instructions**: Design radial mandalas using symmetry.
- **Supplies**: Circular templates, compass, crayons or markers.

Month 8: Robotics & Automation

Week 1: What is a Robot?

Activity 1: Draw a Robot

- **Instructions**: Students design and label their own robot with a specific function.
- **Supplies**: Paper, pencils, crayons.

Activity 2: “Human Robot” Game

- **Instructions**: Give step-by-step commands to a partner acting like a robot.
- **Supplies**: Command cards, floor grid (optional tape).

Week 2: Build a Brushbot

Activity 1: Build a Brushbot

- **Instructions**: Use toothbrush heads and motors to build mini vibrating bots.
- **Supplies**: Toothbrush heads, coin cell batteries, motors, tape.

Activity 2: Obstacle Course Test

- **Instructions**: Design an obstacle course for the bots to navigate.
- **Supplies**: Cardboard barriers, ramps, tape.

Week 3: Coding Robots

Activity 1: Program BeeBots/Ozobots

- **Instructions**: Use simple coding paths to guide robots.
- **Supplies**: BeeBots/Ozobots, coding mats, markers.

Activity 2: Maze Challenge

- **Instructions**: Create mazes and code robots to escape.
- **Supplies**: Tape, cardboard, maze templates.

Week 4: Robot Dance & Showcase

Activity 1: Choreograph a Robot Dance

- **Instructions**: Program robots or act out dances using a sequence of steps.
- **Supplies**: Music, robot props or BeeBots.

Activity 2: Robot Art Show

- **Instructions**: Showcase robot projects and drawings to families or peers.
- **Supplies**: Tables, name cards, student presentations.

Month 9: Environmental Science & Sustainability

Week 1: Reduce, Reuse, Recycle

Activity 1: Recycling Sorting Relay

- **Instructions**: Team game to sort items into correct recycling bins.
- **Supplies**: Recyclable items, bins with labels.

Activity 2: Trash-to-Treasure

- **Instructions**: Make useful or fun objects from clean recyclables.
- **Supplies**: Bottles, cardboard, scissors, glue, tape.

Week 2: Junk Sculptures

Activity 1: Build Recycled Sculptures

- **Instructions**: Create sculptures using only recycled materials.
- **Supplies**: Recyclables, glue guns (with adult help), scissors.

Activity 2: Invent a Green Machine

- **Instructions**: Design and build a prototype of a device that helps the Earth.
- **Supplies**: Cardboard, paper, glue, tape, markers.

Week 3: Solar Energy

Activity 1: Build a Solar Oven

- **Instructions**: Use a pizza box to create a solar-powered s'mores cooker.
- **Supplies**: Pizza box, foil, plastic wrap, black paper, tape, graham crackers, chocolate, marshmallows.

Activity 2: Explore Light & Shadows

- **Instructions**: Use flashlights to test shadow shapes and solar angles.
- **Supplies**: Flashlights, objects, whiteboard/paper.

Week 4: Eco-Friendly Art

Activity 1: Natural Dye Art

- **Instructions**: Use beet juice, turmeric, and spinach to dye fabric or paper.
- **Supplies**: Fabric/paper, bowls, natural items for dye, gloves.

Activity 2: Recycled Paper Art

- **Instructions**: Create paper pulp and mold into new paper/artwork.
- **Supplies**: Blender, scrap paper, screen/mesh, bowls, towels.

Month 10: STEAM Showcase & Passion Projects

Week 1: Brainstorming & Planning

Activity 1: Passion Project Planning

- **Instructions**: Use mind maps to brainstorm individual/group projects.
- **Supplies**: Poster paper, markers, templates.

Activity 2: Proposal Presentations

- **Instructions**: Present project ideas to the class for feedback.
- **Supplies**: Notecards, drawing supplies.

Week 2: Building & Experimenting

Activity 1: Build/Experiment Time

- **Instructions**: Provide dedicated time to work on their projects.
- **Supplies**: Depends on project type (flexible station setup).

Activity 2: Journal & Check-in

- **Instructions**: Record progress in journals and have teacher 1:1s.
- **Supplies**: Journals, pencils.

Week 3: Finishing Touches & Rehearsals

Activity 1: Display/Model Creation

- **Instructions**: Create presentation boards or digital slideshows.
- **Supplies**: Tri-fold boards, glue, pictures, computers.

Activity 2: Practice Presentations

- **Instructions**: Rehearse sharing their project to partners or small groups.
- **Supplies**: Timer, peer feedback forms.

Week 4: Family STEAM Fair

Activity 1: Gallery Walk Setup

- **Instructions**: Set up tables or stations for each project.
- **Supplies**: Name tags, tablecloths, student work, signs.

Activity 2: Presentation Time

- **Instructions**: Invite families for student-led walkthroughs.
- **Supplies**: certificates.