

Weekly Theme: Engineer It!

Marketing Description: Within the animal kingdom, there are many different “jobs” animals take on in order to survive. Many of these jobs involve engineering! Come explore the world of engineering through the eyes of an animal such as a bird, mammal or insect and learn how us humans can study these animal behaviors to invent or improve designs in our own world! Students will be introduced to the concepts of engineering as well as explore four human engineering careers that relate to behaviors found within the animal kingdom.

Weekly Offerings:

Big Idea	Activity Name	Activity Description	Length of Activity	Outside ?	Caregiver Needed?
What is an Engineer?	Identify & Explore the problem	How do engineers get started? They identify and explore a problem that needs fixing! Create a list of problems that you would like to fix to improve your home, backyard or community park!	30 min	Y/N	N
What is an Engineer?	Brainstorm Brewing!	Use your writing skills to help you brainstorm ideas on how to solve common issues to the everyday problems you listed in the “Identify & Explore” activity. Prompts/starting points will be provided.	20 min	N	N
What is an Engineer?	Design a Solution	Make a blueprint! Use your art skills to help you design a solution to the problems you’ve written up and brainstormed. Be sure to label and list materials you need to help you later create your design.	30 min	N	N
What is an Engineer?	Create It!	Try your hand at creating your solution! Use materials from around your house or outside. Use your blueprint to guide you. Test and analyze your creation to see if modifications are needed.	45 min	N	N
Chemical Engineers	Nature’s Protection	Scavenger Hunt for nature’s protective materials (ex: tree bark, thorns, scales, wings, etc...)	30 min	Y	Y
Chemical Engineers	Decomposer Chemistry	Take a close look at nature’s recyclers - decomposers. Use the scientific method to observe as molds and fungi do their amazing work.	15 min (weeklong)	N	N

Chemical Engineers	Chemical Defenses	Explore pH at home to see how chemistry can be used to make food safe for animals to eat. Make your own pH indicator and experiment with acids and bases!	30 min	N	Y
Chemical Engineers	Germ Protection!	Research how shark skin patterns aid in germ fighting for the shark. Design your own pattern/germ fighting solution!	30 min	N	N
Civil Engineers	Simple Machines	Research the concept of simple machines to make connections and compare how animals use tools/simple machines in the wild. See if you can find any simple machines in your own backyard!	30 min	Y	N
Civil Engineers	Strong Structures	Research/brainstorm/design and create your own beaver dam or birds nest using materials in your backyard or in the park (sticks/dirt/water)? Test the strength of your design to see if modifications are needed.	40 min	Y	Y/N
Civil Engineers	Underground Storage	Use the example of Prairie Dogs, who build underground chambers to store food and survive extreme weather, to see if you can invent/design a similar underground shelter for humans to store food and stay safe!	30 min	N	N
Civil Engineers	Extreme Weather!	Spiders create webs with their super strong silk that can withstand heavy winds and other weather. Can you create a web that will withstand the elements? Using sticks and yarn, design and create your own web!	30 min	Y/N	N
Agricultural Engineers	Powerful Pollinators	Design your own pollinator and/or pollination device to help local farmers grow better crops! Use pollinators like bees, moths and butterflies as inspiration.	30min	N	N
Agricultural Engineers	Desert Survival 101	Take a page out of the Desert Survival Kit and create a passive water collection system like many desert creatures do. When water is scarce you have to think creatively!	40 min	Y	Y/N
Agricultural Engineers	Squirrel Gardeners	Get into the mind of a squirrel with this scatter hoarding game.	20 min	Y	N
Agricultural Engineers	Team Cooperation	Research Leafcutter Ant communities to learn how they cooperate and grow their own food. If your family was modeled	30 min	N	N

		after leafcutter ants, who would be in charge of what and what foods would you grow? How would your home be designed?			
Environmental Engineers	Oil Spill Cleanup	Take inspiration from animals like jellyfish and coral to see if you can improve the oil spill cleanup process.	30 min	N	N
Environmental Engineers	Popsicle Trees	Using rubber bands and popsicle sticks, create a strong tree that can support heavy items. Challenge yourself to build one as high and as strong as a mighty oak tree!	30 min	N	N
Environmental Engineers	Beat the Heat	Build a home that stays cool in the summer sun by learning some engineering tricks from termites.	30 min	Y	N
Environmental Engineers	Community Homes	Design and create community bug homes using Leaf Rolling Caterpillars as inspiration. Use materials you can find outside like sticks, leaves, grass, etc...	30 min	Y	N

Material List:

- Included in Weekly Kit:
 - Nature Journal
 - Play dough
 - Construction paper
 - popsicle sticks
 - Rubber bands
 - White paper
 - Sponge
- From Art Starter Kit
 - Yarn
 - Scissors
 - Clear tape
 - Colored pencils
 - Crayons
 - Pencil sharpener
 - Masking Tape

- From Science Starter Kit
 - Thermometer
 - Magnifying glass
 - Compass
 - Pipettes
 - Tweezers
 - Ruler
 - Timer

Notes:

- The programs that have Y/N as outside or Y/N as caregiver involvement are optional choices based on the age, level of independence and access to safe outdoor spaces. All of the activities benefit from going outside to get inspiration from nature but are not required.
- Programs that do require close caregiver involvement are:
 - Chemical Engineers: Nature's Protection
 - Chemical Engineers: Chemical Defenses
 - Agricultural Engineers: Desert Survival 101