



EAGER ENGINEERS

5 DAYS OF THEMED SCHOOL-AGE
SUMMER CAMP LESSONS

**BEST
DAY
EVER!**

Find more at:
BESTDAYEVER.FUN

INTRODUCTION

Do you have a child who loves to design and construct? Then Eager Engineers camp is for them! This camp will feature hands-on building activities, real-world problem-solving, and exploring the different types of engineering. While the lesson plan incorporates many different Pennsylvania Learning Standards, it focuses on the key learning area of "Approaches to Learning through Play." Specifically, children will learn to engage in learning activities that meet the PA Standard Areas of "Constructing, Organizing, and Applying Knowledge."

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SCHEDULE

DAY 1

ARRIVAL ACTIVITY	20 MINUTES
READY, SET, LEARN	15 MINUTES
HANDS-ON ACTIVITY - BUILDING BRIDGES	20 MINUTES
BREAK/SNACK TIME	15 MINUTES
LET'S GET MOVING - HUMAN ALPHABET	30 MINUTES
HANDS-ON ACTIVITY - POOL NOODLE TOWER	15 MINUTES
BREAK/LUNCH TIME	15 MINUTES
HANDS-ON ACTIVITY - BUILD MY DREAMHOUSE	30 MINUTES
SOCIAL-EMOTIONAL LEARNING - HANDS ARE NOT FOR HITTING	30 MINUTES
HANDS-ON ACTIVITY - BRICK BUILDING CHALLENGE	30 MINUTES
WRAP UP/GOODBYES	10 MINUTES
LATE PICK-UP	15 MINUTES

DAY 2

ARRIVAL ACTIVITY	20 MINUTES
READY, SET, LEARN	15 MINUTES
HANDS-ON ACTIVITY - DESIGN A DANCER	20 MINUTES
BREAK/SNACK TIME	15 MINUTES
LET'S GET MOVING - HULA HOOP RESCUE	30 MINUTES
HANDS-ON ACTIVITY - CONSTRUCTING AN AIRPLANE	15 MINUTES
BREAK/LUNCH TIME	15 MINUTES
HANDS-ON ACTIVITY - COLAR OVEN S'MORES	30 MINUTES
SOCIAL-EMOTIONAL LEARNING - STICK-TO-IT-IVENESS	30 MINUTES
HANDS-ON ACTIVITY - BUILD A BACK SCRATCHER	30 MINUTES
WRAP UP/GOODBYES	10 MINUTES
LATE PICK-UP	15 MINUTES

DAY 3

ARRIVAL ACTIVITY	20 MINUTES
READY, SET, LEARN	15 MINUTES
HANDS-ON ACTIVITY - WATER BENDING	20 MINUTES
BREAK/SNACK TIME	15 MINUTES
LET'S GET MOVING - STATIC ELECTRICITY GAME	30 MINUTES
HANDS-ON ACTIVITY - MAGIC SPOON	15 MINUTES
BREAK/LUNCH TIME	15 MINUTES
HANDS-ON ACTIVITY - PENNY BATTERY	30 MINUTES



SOCIAL-EMOTIONAL LEARNING - LET YOUR LIGHT SHINE	30 MINUTES
HANDS-ON ACTIVITY - ELECTRIC SCAVENGER HUNT	30 MINUTES
WRAP UP/GOODBYES	10 MINUTES
LATE PICK-UP	15 MINUTES

DAY 4

ARRIVAL ACTIVITY	20 MINUTES
READY, SET, LEARN	15 MINUTES
HANDS-ON ACTIVITY - SUN DIAL	20 MINUTES
BREAK/SNACK TIME	15 MINUTES
LET'S GET MOVING - FISHING FUN	30 MINUTES
HANDS-ON ACTIVITY - SHOO BIRD SHOO!	15 MINUTES
BREAK/LUNCH TIME	15 MINUTES
HANDS-ON ACTIVITY - DIY WATER FILTRATION	30 MINUTES
SOCIAL-EMOTIONAL LEARNING - HOW CAN I HELP THE ENVIRONMENT?	30 MINUTES
HANDS-ON ACTIVITY - SOLAR HEAT	30 MINUTES
WRAP UP/GOODBYES	10 MINUTES
LATE PICK-UP	15 MINUTES

DAY 5

ARRIVAL ACTIVITY	20 MINUTES
READY, SET, LEARN	15 MINUTES
HANDS-ON ACTIVITY - SODA GEYSER	20 MINUTES
BREAK/SNACK TIME	15 MINUTES
LET'S GET MOVING - WATER BALOON POP!	30 MINUTES
HANDS-ON ACTIVITY- POLISHED PENNIES	15 MINUTES
BREAK/LUNCH TIME	15 MINUTES
HANDS-ON ACTIVITY - SLIME: SOLID OR LIQUID?	30 MINUTES
SOCIAL-EMOTIONAL LEARNING - CONTROL YOUR REACTIONS	30 MINUTES
HANDS-ON ACTIVITY - BATH BOMBS	30 MINUTES
WRAP UP/GOODBYES	10 MINUTES
LATE PICK-UP	15 MINUTES

MATERIALS LIST

- Cup
- City map
- Binder clips (3/4 "wide)
- Jumbo craft stick
- Books (for weight)
- Pool noodles cut into 1" rings
- Toothpicks
- Posterboard
- Glue
- Markers
- Paper
- Pencils
- Tape
- Scissors
- Paint
- Paintbrushes
- Manilla construction paper, large
- Building Bricks
- Toy Car
- Straws cut into 1/4-inch pieces
- Chenille craft sticks
- Clay
- Hula hoops
- Cones
- Clothespins (wooden)
- Wooden craft sticks (small, large)
- Cardboard pizza boxes
- Aluminum foil
- Plastic wrap
- Graham crackers
- Marshmallows
- Chocolate bar, miniature size
- Wooden skewer
- Stick
- Straws
- Stones
- Cardboard pieces
- Extension cord
- Plastic comb
- Wool fabric scrap
- Small paper pieces
- Balloons
- Small paper plates
- Plastic spoons
- Salt
- Pepper
- Wool cloth
- Pennies (post-1982)*
- Piece of 100-grit sandpaper
- Matboard or thick cardboard
- Vinegar
- A red LED; high-intensity ones are easier to see
- Electrical tape
- A voltmeter
- Paper towel
- Optional: other LEDs of different colors, such as yellow and blue
- Colored pencils
- Clipboards
- Solar garden light
- Chalk markers
- Pool noodles (2)
- Paper or plastic fish
- Pencil and paper for sketching designs
- Hole punchers
- String/yarn
- Aluminum foil pieces
- Pie tins
- Plastic beads
- Old CD's and DVD's
- Wire hangers
- Paper clips
- Binder rings
- Rhinestones and jewels
- Fan
- Flashlight
- Plastic 2-liter soda bottle with lid
- Cotton balls (2)
- Sand (1 cup)
- Rocks or gravel (1 cup)

- Activated Charcoal (1 cup – found at pet stores)
- Dirty water (1 liter – make your own by mixing dirt or mud into water)
- Clear plastic cups
- Reference materials to research environmental issues (books, journals, internet)
- Construction paper (2) white, (1) black
- Plastic wrap
- Thermometer
- Toothpaste
- 2-liter bottles of diet soda (7)
- Mint chewy candies (the kind that come in a roll of seven and have a hard coating but are chewy inside) (6 packs)
- Index cards
- Masking tape
- Water balloons filled with water
- Buckets
- White vinegar
- Salt
- Teaspoon
- Paper towels
- Dull pennies (7)
- Cornstarch (one cup per child)
- Food coloring
- Mixing bowl
- Wooden spoons
- Paper plates
- Small plastic resealable bags
- Chart paper or chalkboard
- Citric acid
- Baking soda
- Coconut oil
- Measuring cups
- Bowls
- Plastic eggs for molds
- Paper bags
- Ribbon
- Periodic Table of Elements

SHOPPING LIST

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DAY 1 – CIVIL ENGINEERING



ACTIVITY/CONCENTRATION

EARLY DROP OFF – ARRIVAL ACTIVITY

During this free time, students will select and use toys or games associated with the daily theme.



DURATION/SCHEDULE

180 minutes – 6 to 9 a.m.



ACTIVITY/CONCENTRATION

READY, SET, LEARN

Class discussion about engineering: Ask the students “How do we get from one place to another without walking everywhere? How do we communicate with people from far away? These were problems people struggled with before there were cars, phones, and computers. Do you know who solved these problems? Hold up the city map for children to see. Ask them to guess what type of engineering we are going to focus on today. Assess prior knowledge by asking the children “what is civil engineering?”

Fun Facts:

- Engineers design and build things using math and science to help solve a specific problem.
- The United States census of 1850 listed the occupation of "engineer" for the first time with a count of 2,000. There were fewer than 50 engineering graduates in the U.S. before 1865.
- Most engineers have had years of training. Much of their training involves working within a limited budget and materials.
- The word engineer is derived from the Latin word that means cleverness.
- There are many different types of engineering, today we are going to talk about civil engineering. Civil engineers work on roads, bridges, buildings, tunnels, and other public structures.
- Civil engineers take care of all different phases of infrastructure, from planning and construction to maintenance and demolition.
- Civil engineers are responsible for lots of the things that are required for a society to function properly. Safe water supplies, sewage treatment, buildings, railways, and roads are all part of civil engineering.
- Famous civil engineers:
 - Pierre L'Enfant – Designer of Washington, D.C. L'Enfant, who came to America from France to fight in the Revolutionary War under George Washington and was later commissioned by Washington to design the city from scratch. L'Enfant envisioned a grand capital of wide avenues, public squares, and inspiring buildings in what was then a district of hills, forests, marshes, and plantations. The centerpiece of L'Enfant's plan was a great "public walk." Today's National Mall is a wide, straight strip of grass and trees that stretches for two miles, from Capitol Hill to the Potomac River. This was the main hub of L'Enfant's city with spokes connecting the other parts of the city. This made it easy for people to get to the center of the city. This same design was later used by Walt Disney for Disneyland and Disney World. This design was also used by many modern airports. L'Enfant also designed the city of Indianapolis, Indiana.
 - Joseph Strauss designed the famous Golden Gate Bridge to withstand the deep and turbulent waters of the San Francisco Bay and to be earthquake proof. At the time the suspension bridge was built in 1933, it was the longest bridge in the world and held the title for 27 years.