



STEM and Educational Outreach Program

Classroom Activities

Pre-K through 5th grade

Listed below is a sampling of some of our Pre-K through 5th grade activities that can be facilitated by one of our scientists or engineers right in your classroom. Contact Mr. Casey Weinger at casey.p.weinger.civ@mail.mil to schedule an activity for your class or grade level.



We provide all necessary supplies and presentation materials tailored to your curriculum needs.



Individual activities typically require between 50 to 60 minutes (including setup, instruction, and clean-up).

Activity Title	Activity Description	Next Generation Science Standards: Disciplines	Recommended Grade Level
Battery Power	Students will construct power cells from household materials while learning electrical concepts like conductivity, polarity, voltage, and current. Working in small groups, students will troubleshoot circuit connections while taking voltage measurements with a digital multi-meter.	Physical Science, Engineering	4th, 5th
*BotsforTots	Students will learn how to code "screen-free" by drawing simple mazes using color markers. Color code sequences are used to program Ozobots to perform a variety of maneuvers. This lesson is temporarily unavailable. This activity illustrates the concept of sequencing used by computer programmers.	Engineering, Technology, and Applications of Science	2nd, 3rd

***This lesson requires MORE THAN 1 hour and is reserved for STEM camp programs or other special events.**



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND

CHEMICAL BIOLOGICAL CENTER

Activity Title	Activity Description	Next Generation Science Standards: Disciplines	Recommended Grade Level
Build a Spectroscope	This activity guides students through the construction of their own spectroscope using rather simple materials while learning about properties of light like diffraction and refraction. Students will be able to compare the visible spectra produced by different types of lighting sources.	Physical Science; Earth and Space Science; Engineering	1st through 5th
Chemical Reactions	Students learn to identify the differences between physical changes and chemical reactions while performing three distinct reactions: acid-base (gas production and color change), catalytic reaction (gas production, heat generation), and polymerization reaction (liquid to semi-solid).	Physical Science	2nd
Colors of Leaves / Plant Pigments	This lesson explores the science of Fall colors through a discussion of seasonal changes and observations by students of the varying colors of leaves. Students conduct a hands-on extraction of the pigment chlorophyll from spinach leaves and separate the pigment into several different colors using a technique called chromatography.	Life Science	1st, 2nd
Crystal Snowflakes	Do you know how snowflakes form? In this activity, students are guided through the process of growing Borax crystals in the shape of a snowflake or icicle, while learning about minerals, their structures/shapes, and crystallization.	Physical Science; Earth and Space Science	PreK
Egg Drop Test	Students will work with a scientist or engineer to design a contraption to protect an egg when dropped. Discussion topics include the science of moving objects, Newton's 1st, 2nd and 3rd laws of motion, force, acceleration, and inertia.	Physical Science; Engineering	3rd, 4th
Fun with Polymers	Students will make Gak, Flubber, or Oobleck using household chemicals while learning about polymers and chemical reactions. The activity can be paired with a discussion of the Dr. Seuss book Bartholomew and the Oobleck. Variations on this activity include discussions of different types of plastic polymers and recycling.	Physical Science	PreK, K, 1, 2



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND

CHEMICAL BIOLOGICAL CENTER

Activity Title	Activity Description	Next Generation Science Standards: Disciplines	Recommended Grade Level
How Clean are your Hands?	Students will learn the importance of proper hand washing and hygiene by covering their hands with a UV sensitive powder, then washing them and putting their hands under a UV light. They will see how much of the powder remains after they wash their hands. The powder represents germs and will show them how many germs are left on their hands after washing.	Life Science	K, 1st
Magnetic Cereal	This activity introduces students to the field of food science through an examination of one of the minerals typically added to foods we eat every day. For example, bread, pasta, and cereals are fortified with iron. Iron plays an important role in the ability of our red blood cells to carry oxygen throughout the body. A hands-on activity allows students to see the iron that is added to bran cereal and extract it using a magnet.	Physical Science; Life Science	1st through 4th
Popsicle Stick Catapults	Students will construct catapults using popsicle sticks, rubber-bands, and a plastic spoon. The students will launch objects and measure their distances. They will then look at their designs and make modifications to make objects fly shorter or longer distances.	Engineering	4th through 5th
Reverse Engineering - DIY Speakers	Students are introduced to the role of electricity and magnetism as they “reverse engineer” a standard home audio speaker using simple materials. At the completion of this activity, students will be able to test their “DIY” speakers using a stereo amplifier. Topics include magnetism and sound waves along with a discussion of how the military uses reverse engineering.	Physical Science; Engineering	2nd through 5th
Strawberry DNA	Students will use a saltwater/detergent solution to extract DNA from strawberries and will separate the DNA from the cellular debris using rubbing alcohol. A discussion of genetic structure and DNA as a blueprint for life introduces this topic.	Life Science	2nd through 5th

Have a lesson idea? Please let us know!



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND

CHEMICAL BIOLOGICAL CENTER

Activity Title	Activity Description	Next Generation Science Standards: Disciplines	Recommended Grade Level
The Color of Science	This activity illustrates the concept of pH as a measure of the strength of an acid or a base. Students will use a red cabbage extract as a pH indicator to test the pH of different substances through a colorimetric (color-changing) reaction.	Physical Science	4th, 5th
Things that Glow	Why do fireflies have glowing behinds? How do glow-sticks work? Students will investigate these questions while exploring different types of luminescence with demonstrations involving light-producing chemical reactions. UV color changing and glow-in-the-dark bead bracelets are constructed as part of this activity.	Physical Science, Life Science	K, 1st
Water Filtration	Students will hypothesize the effects of different materials on filtering water. They will assemble a filter using commonly available household materials to see which ones remove the most debris creating the cleanest water.	Engineering	4th, 5th
Water Wheel	Today, it is more important than ever to rediscover alternate energy sources. In this activity, students will work in groups to engineer, design, and build a water wheel which can harness the most power from a flowing water source. The resulting water wheels will be evaluated and tested to see which design can lift a weighted object the greatest distance.	Engineering	3rd through 5th



Microscope Detective

- Module 1: Observe structures of minute living things
- Module 2: Making slides of cells
- Module 3: Comparing materials (hair, fiber, fabric)