STEM Program Request Form
Adopt-A-School Program Partner: Nina Otero Community School
Last updated 12/19/19

Use this form or submit online:
https://www.sfafs.org/nina-otero-community-school-program-request-form.html
Please submit all requests **at least** two weeks in advance.

Please note – we will make every effort to fulfill your request, but since we rely on our generous volunteers to deliver all of our programs, all programs are subject to volunteer availability.

First Name: **Last Name:**
Email: **Cell #:**
Grade Level:

Please select which program(s) would you like to request by checking the appropriate boxes below. Submit forms to:

Grade K-4 Requests: Brenda Dominguez, Adopt-A-School Site Coordinator
Grade 5-8 Requests: Jeri Lyn Salazar, Adopt-A-School Site Coordinator

In-School Programs

Earth Science/Environment

- ❒ **Science Kit Support** *(all grades)* **–** volunteers can assist with preparation of kit materials or lessons.
- ❒ **Mapping our Location on Earth** *(all grades)* **–** a 2-session program**:** session 1 introduces students to mapping and spatial orientation, session 2 involves hands-on map making.
- ❒ **Earth's Water Cycle** *(grades 3+)* - students learn about the earth's water cycle and its various components: the effects of the oceans, atmosphere and land forms, different forms of precipitation and the return of moisture to the atmosphere via evaporation and transpiration. Activity: How can water be 'cleaned' by the earth.
- ❒ **Simtable Demo** *(all grades)* - A digital sand table based on GIS data. A Santa Fe company that created the leading technology used for wildfire and emergency management can do grade-appropriate demonstrations.

Life/Health Science

- ❒ **Science of Birds** *(all grades)* **–** students learn about how birds fly, how they sing, and various physical adaptations of birds (beaks, feathers, wings and more.**)**
- ❒ **How Does the Eye Work?** *(all grades)* **–** using a working model of the eye, students will learn about all the pieces of the eye, how they work, and what can affect eyesight.
- ❒ **A Tree's Tale** *(all grades)* **–** working with real tree rings**,** students learn about the science of trees and tree dating.
- ❒ **Science of Bees** *(all grades)* **–** students learn all the buzz about bees from an amateur beekeeper and retired biology teacher.

- ❒ **Animal interactions (grades 3-6) [Food chains and webs, Importance of predators]** Students become organisms in an ocean food chain and figure out what happens when the top predator nears extinction
- ❒ **Plant classification (grades 3-5)** Students learn about high level classification, practice together, then create and classify a new plant species.

- ❒ **Spreading germs (grades 2-3)**Discuss different kinds of germs using germ stuffed animals; Students play a game that simulates germs being spread around the classroom; older students can graph the outcome.

- ❒ **DNA extraction from strawberries (grades 2-8)**Learn about DNA and extract it from strawberries. Younger students learn about DNA as instructions and create a "recipe" for making themselves. Older students learn about the structure of DNA at a high level.

- ❒ **Leaves (K-2)** Students explore unusual leaves and measure how big leaves can get. Older students practice writing sentences that compare leaves or making venn diagrams.

- ❒ **Seeds and seed dispersal (K-2)** Students learn about the different mechanisms for seed dispersal. Students handle different kinds of seeds guess at the seed dispersal mechanisms and discover which ones float (and could be dispersed by water).

- ❒ **Body systems (3-5)** Students take a quiz (not graded) to see how much they know about the human body. The quiz highlights amazing facts about the human body and gets them thinking about body systems. Students also work in groups and make a poster with specific requirements about a specific body system that they then present to the class to teach their peers about their body system.

- ❒ **Bouncy balls, slime, silly putty (3-8)** Great for getting kids excited and creating. They discuss how the difference in ingredients (or their amounts) changed the outcome. Older kids can also talk about polymers and how they slide past each other like spaghetti to give stretching abilities, and crosslinking to stabilize.

- ❒ **Dry ice bubbles (K-8)** Hands on and super exciting for the kids. They make bubbles using dish soap and dry ice. Younger students learn about carbon dioxide and its connection to our bodies and photosynthesis. Older students learn about carbon and the properties that make it able to support life. We also talk about phase change and how volume expands when the dry ice changes from solid to gas.

- ❒ **Dinosaurs (K-1)** Students make a book about dinosaur sizes. Each page has a picture of a dinosaur and a comparison to help the kids understand the size and listen to a book ("A Sauroposeidon is taller than 3 giraffes"). Students can draw the comparison (3 giraffes) and the dinosaur and tape out the size of the largest dinosaur footprint on the floor and see if we can fit the class in it.

- ❒ **Volcanoes (4-5)**Students learn about volcanoes on earth and in space. Then, in groups they plot a volcano (or Mt. Everest as a comparison) to scale.

- ❒ **Animal Adaptation in the Arctic (K-2)** Students learn cool facts about walruses and cut out and build a snow den. Then they learn about how blubber/fat keeps the animals warm by putting their hand in a plastic bag in very cold water. One bag is insulated with shortening, the other isn't so they can feel the difference between their two hands.

- ❒ **Animal Adaptation (2-3)** Students learn about adaptations in penguins and marine iguanas. They then choose an animal and figure out what adaptations it would need to go into a different environment. They draw the animal and describe the adaptations.

- ❒ **Positive and Negative Charges (2-3)** Students learn that opposite charges attract and similar charges repel through interactive classroom activities, including formation of a crystal structure using the entire class.

- ❒ **Parts of a tree (2-3)** Students look at pictures of unusual trees. Then the students get a letter from their Martian pen pal who is trying to read a book about trees that has been translated into Martian. Because he has never seen a tree, he asks them to tell them about all the parts of a tree as well as how those parts fit together. The students have to use only words because pictures won't transmit to mars.

- ❒ **Snowflakes (2-6)** Students see some amazing pictures of snowflakes. Younger students make snowflakes out of paper, weighing the paper before and after they start cutting. They then plot the weight of their final snowflakes. Older students talk about the science behind snowflakes and could make snowflakes (ie. with borax, or with dry ice and water.)

- ❒ **Cutting edge DNA topics (6-8)**
  Topics can cover: cloning, DNA computers, and/or DNA nanotechnology.

- ❒ **Computer-based DNA case studies (3-8)**
  Each one is an inquiry activity that gets the students to use critical thinking skills to solve a problem using DNA sequences. Examples include:
  Is a panda really a bear?
  Sea monsters
  Name that critter
  Creatures that Glow
  What microbe killed the aztecs
  MRSA in the NICU: outbreak or coincidence?
  Risky Virus
  Murder by HIV
  School Microbes
  Viral Outbreak
  Parmesan by any other name
  Federal Fish
  Jurassic Park DNA
  What's growing on my plant?
  Mystery Biter

Math & Engineering

- ❒ **Word Problems** *(all grades)* **–** Using high-interest (sports, music, movies) stories, students will go through the steps of the various mathematical tasks needed to solve the problem.

- ❒ **The Golden Ratio** *(all grades)* – Students will learn about the Golden Ratio and why it is so fascinating to artists, scientists, designers, and mathematicians. Then, students will be challenged to look around their classrooms and at their personal belongings to find objects or structures that use the Golden Ratio. A discussion of ratio and proportion would be included.
- ❒ **Is this Really Math?** *(all grades)* – Do your students need practice on fundamental math skills, such as fractions, calculating percentages and time tables? In this activity, volunteers will use high-interest materials and visuals such as contemporary music, sports data and Smart Board visuals to help students gain practice and confidence in math and understand the value of math in our lives.
- ❒ **Fun with Fractals** *(all grades)* – students learn about fractals, fractal patterns, and how they blend science, math and art. Students will discover real-life examples in art and nature and practice creating their own fractals.
- ❒ **Legos** *(all grades)* –

Physical Science

(Please see http://users.hubwest.com/hubert/mrscience/science1.html for additional details.)

- ❒ **Airplane flight** *(all grades)* – reviews the history of airplanes and shows how a Wright Brothers-type wind tunnel works.
- ❒ **Do aliens exist?** *(all grades)* - What does it take for life to exist? What is the current tally of habitable planets. Can we get there?
- ❒ **Why are ants so strong?** *(all grades)* - This is about length, area, volume, and the relation between them.
- ❒ **Why is the sky blue** - *(all grades)* - Students learn that light consists of different colors and play a simple game showing scattering.
- ❒ **DNA** *(all grades)* – Students learn about DNA, genetics etc. by extracting DNA from strawberries.
- ❒ **DVDs** *(all grades)* - Students learn how is information stored on a DVD.
- ❒ **Electromagnetism** *(all grades)* – Students learn how electricity is made and how to create magnetism.
- ❒ **Fibonacci Numbers** *(all grades)* - A bit of history about Leonardo of Pisa, and the number zero. Students also learn about Fibonacci numbers and where they show up in nature.
- ❒ **Gravity**, **Planets and Black Holes** *(all grades)* – Students learn about gravity, rockets, satellites, escape velocity, and black holes. The demo also shows gravitational waves from colliding black holes.
- ❒ **Internal Reflection** – *(grades 5+)* - Students see optical phenomena of various kinds and fiber optics
- ❒ **Measuring the Wavelength of Light** *(all grades)* – Students see the wave nature of light, and measure wavelength using simple materials.
- ❒ **Making Music** (K only) – Students see how big things make low notes, and small things make high notes and get to play and sing.
- ❒ **Ocean Acidification** *(all grades)* - Discuss acid rain, ocean acidification.
- ❒ **Making Planets** (grades 6+) – Students explore: What makes a planet? How many are there? How many are like earth?
- ❒ **Rainbows***(all grades)* – Students explore how rainbows work and see various demos about refraction.
- ❒ **Size of Everything***(all grades)* – Students explore the size of everything from the smallest atom to the size of the universe. They also explore things like how long does it take to get to places in space?
- ❒ **Sound and Sound Recording** *(all grades)* – Students explore what is sound, the history of sound recording and see various demos.
- ❒ **Speed of Sound** *(all grades)* - Outside activity, weather dependent. Go outside, make some noise, listen for the echo and measure the speed of sound.
- ❒ **Sunspots** *(all grades)* - An outdoor activity that requires clear skies. At the moment (2019) there are very few, often no sunspots. Be patient.

- ❒ **Telephone History** *(all grades)* – Students discuss the history of the telephone and see several show-and-tell items.
- ❒ **Tornados***(all grades)* – Students learn how tornadoes form and make a tornado with dry ice.
- ❒ **Static Electricity** *(all grades)* **–** Students learn the basics of electricity and see various fun demonstrations that illustrate how like charges repel and opposite charges attract.
- ❒ **Paper Rockets** *(all grades)* – Students get to create their own paper rockets and launch them to learn about the physics of flying.
- ❒ **Water Rockets** *(grades 3-6)* – Students learn how rockets fly by creating their own water rockets using plastic bottles (weather dependent.)
- ❒ **Fun with LN2** *(all grades)* – Students learn about the many physical properties and uses of liquid nitrogen through many demonstrations and activities.

Science Based Creative Problem Solving Challenges

- ❒ **Goofy Gadgets and Other UFO's or Unidentified Fun Objectives** *(all grades)* **–** creative problem solving activities based on the STEM concepts used in Destination Imagination's "Instant Challenge" competition. All activities will be non-competitive, but will include a "what worked, what didn't work" reflection.

STEM Fair Support

- ❒ **Classroom Science Experiments** *(grades 4-6)* **–** Students learn how scientists think and work by participating in a classroom science experiment, which emphasizes three important elements in any scientific process: making measurements, changing one thing at a time, and conducting multiple trials.
- ❒ **STEM Fair Mentoring** *(grades 3-8)* – Volunteers can work with students in your classroom as they work on their science/STEM projects.

STEM Literacy

- ❒ Counting on Literacy to Scaffold Math Learning – children's literature (fiction and nonfiction) is used to engage students in math through reading and hands-on activities. Literature is used to contextualize math concepts and to apply the practices of making sense of problems, constructing viable arguments, and modeling by thinking, talking, and writing math.

After-school Programs

Computer Science

- ❒ **a-MAZE-ing Level 1** *(grades 2-3)* **–** Students practice critical thinking by solving maze puzzles. Students gain exposure to problem solving, math, visual motor and fine motor skills in this activity.

- ❒ **a-MAZE-ing Level 2** *(grades 4-5)* **–** Students practice critical thinking by solving physical maze puzzles. Students gain exposure to problem solving, math, visual motor and fine motor skills in this activity.

- ❒ **INTRO TO ALGORITHMS** *(grades 2-3)* – Students learn now to decompose larger tasks into logical components. Interactive exercises to physically demonstrate how to think about algorithms. Students

perform various group activities, from sorting themselves to "programming" one of the facilitators to do a task.

- ❒ SECRETS IN CODE (grade 5) – In a multi-session course, students learn the fundamentals of cryptography, showcase several methods, then get hands-on experience in coding secret messages.

Earth Science/Environment

- ❒ **Simtable Demo** *(all grades)* - A digital sand table based on GIS data. A Santa Fe company that created the leading technology used for wildfire and emergency management can do grade-appropriate demonstrations.

Life/Health Science

- ❒ **How Do We Move** *(grades 4-5)* **–** a 6-session program that introduces students to basic vocabulary of the muscles, bones and brain and how they work together. Students will perform many activities to explore how our brain communicates with our muscles, how our muscles react to stress, and how to improve balance, coordination and strength.
- ❒ **Support Animals, Save Lives** *(group or separate presentations for grades K-2 and grades 4-8)* **–** A representative from the Santa Fe Animal Shelter will discuss animal behavior, proper care, and sociology of pets and owners. Presentations can be tailored to cover a variety of topics such as:
  - The Adoption Process
  - Dog behavior training
  - What do dogs and humans have in common?
  - How to approach a dog you don't know
  - Sniffer training demo

- ❒ **Canine Heroes** *(grades 6-8)* - Students will learn about the physiology of a dog's sense of smell. A team from High Desert Canine (a specially trained search dog and the handler) will talk about how that's used in search and rescue missions. They'll also talk about animal behavior and the importance of teamwork. The session ends with a live demonstration.