

## 2016 Dream Catchers Science Program

A hands-on science and engineering program designed for American Indian students in grades 6 through 12 who are interested in science, math and engineering. There are no costs to attend the program and parents are invited to attend workshops with their student(s).

**Session 1:** Wednesday, October 5, 2016: San Juan College, Farmington, NM

**Session 2:** Wednesday, October 12, 2016: Navajo Technical University, Crownpoint, NM

**Session 3:** Saturday, October 15, 2016: University of New Mexico, Albuquerque, NM

**Session 4:** Wednesday, October 26, 2016: New Mexico State University, Grants, NM

### Fuel Cell Cars!

(Offered Session 1)

What are fuel cell cars? What is fuel cell energy? Will it apply more in your life in the years to come? We'll take a look at fuel cell cars and explore the use of them and how fuel cell energy is viable today and in the future. You will get a chance to build your own car. Here is a brief description of your future cars! Fuel cell vehicles (FCVs) have the potential to significantly reduce our dependence on foreign oil and lower harmful emissions that contribute to climate change. FCVs run on hydrogen gas rather than gasoline and emit no harmful tailpipe emissions. Several challenges must be overcome for them to be competitive with conventional vehicles, but their potential benefits are substantial. – [www.fueleconomy.gov](http://www.fueleconomy.gov)

### Programming With Scratch

(Offered Session 1)

How would you like to make your own cartoon? How about your own video game? Design the next battleship or cool smartphone app? Come learn to "scratch" and watch your designs come alive. Learn the tools to become creators of technology for the benefit of your community. This class teaches problem solving and critical thinking skills that can inform other walks of life. Students will learn how to solve problems in innovative ways. If you are scratching your head, then this is the course for you!

### Using PM to Get Things Done

(Offered Session 1)

Just imagine... It's a blissful sunny day. You and your friends are hanging out under a shaded tree. Text messages, music, and selfies are all being shared with one another. Your giggles and smiles fill the crisp air. Without the advent of smartphones or notepads, this would not be possible. Have you ever wondered how this is really possible? Acquiring information is easy, right? Touch a button, swipe a screen but what goes into making a smartphone or notepad?

Believe it or not, each of these concepts all started with what is called project management. It can be applied to virtually everything we do or create. Whether it's building something, organizing, planning, or thinking about college, project management provides us with tools that help us meet our goals. In this class, you will apply the fundamental concepts of project management to either plan a family vacation or an event, your first or second job, find an apartment or a car, or decide which college to attend.



## Plant a Seed, The Language of Technology

(Offered Session 2)

Solving future problems starts with today's technology. We will take a glimpse into the future with issues of today. How will we address the problem with a limited living space? Where and who can we look to for reference, today and the future. Explore today's technology; how does Pokémon go know where we are, and where are the creatures to capture? How do robots work, and how can they help solve problems?

## Project Management

(Offered Sessions 2, 3, and 4)

Have you ever wondered how a basketball gym, rocket or phone was created? Or, how an individual was able to get to a certain place in life? All of these can be considered projects. In order for a project to be completed, it requires a lot of questions to be addressed. How many people do we need to build this part, how many parts do we need, how much is it going to cost? Should I go to college, should I spend or invest my money?

To begin to address these questions, it all starts with what is called project management. It can be applied to virtually everything we do or create. Whether it's building something or planning our future, project management provides us with tools to answer questions in order to meet our goals. In short, project management helps us to manage the present and plan for the future.

In this class, you will apply the fundamental concepts of project management to organize a couple of projects. You will create a schedule and budget to help plan and manage costs. One of the projects you will be organizing, planning and managing will be your life after high school. Also, while learning and applying project management concepts, we will briefly discuss a few topics that you are sure to experience after high school if you haven't already encountered them.

## A Brief Look At Renewable Energies

(Offered Sessions 2, 3, and 4)

In this class, we will learn about two promising forms of renewable energy: solar and wind power. We will also examine fuel cells, which can be used for transportation and reduce the usage of fossil fuels. We will put together a fuel cell car and see how it can be powered by batteries or fuel cells. This will be accomplished through a series of experiments that the student scientists will perform.

With time permitting, we will explore wind power, and see how we can convert it into usable electricity. This will progress through a series of experiments meant to demonstrate how wind energy can be used. The student scientists will be split into groups of 4-5, where each group member will have a role that they will be responsible for performing

## Exploring Mars – Yesterday, Today, and Tomorrow

(Offered Sessions 2, 3, and 4)

Ancient Babylonian astrologers believed Mars was a planet of evil, plague, and death. By the nineteenth century, it was believed that Mars had a system of water canals designed by aliens. From the first successful flyby of Mars in 1965 by Mariner 4, to the Mars Orbiter Mission (inserted into Martian orbit on 24 September 2014), we know much more about Mars. We know there is ice under the polar caps and that water flows across Mars' surface at certain times of the year.

How did we get so much wrong, what do we know now? What will we learn about Mars in the future? What more do scientists want to know and why?

Join us as we learn about the Red Planet next door to Earth.