

Mad Science of Houston Camp Descriptions

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Following are some topics you will explore during our fun five-day camps. These are only a sample of some of the activities that we will be doing each day. The topics will not necessarily follow this order. However, each of these topics will be included at some point in the camp.

Robots

Robot Concepts - Roll your way into robot science. Experiment with different robot designs, as you learn what makes a robot work. Invent your own robot designs using recycled materials.

Robot Basics - Discover the world of robots as we investigate the differences between humans and their robotic counterparts. What makes a robot work will be explored during hands-on activities and discussions.

Robot Building - Each day some time will be spent perfecting a real working robot that we will finish and take home on Friday. We will be using our fine motor skills and we require that campers at least be entering the second grade so they do not become frustrated with construction.

Red Hot Robots - Hands-on activities will include fun time with our robots. We will play games and experiment with super cool robots such as a soccer robot, a line tracker, a hyper peppy, and a robotic arm.

Robotic Science - Campers will learn how robots use infrared and other sensors to discover the environment they are placed in. Working in groups we will explore how robots work and how they can make our lives easier.

Adventures in the Wild

Earth Awareness - How are we hurting Mother Earth? Discover how science will help us protect our planet. Children will understand the basics of water pollution, acid rain, and the benefits of solar energy. By actively recycling their own garbage, they will make their very own paper to take home and actually use!

Nature - Play the nature scavenger hunt that combines science exploration with the animal kingdom! Campers learn about life cycles and animal habits, and even replicate an animal's footprints.

The Birds & The Beasts - Where do owls live and what do they eat? How do some bugs walk on water? How do ants collect all their food? These questions and more will be answered with a walk on the wild side of things to explore owls, birds and all kinds of bugs.

Science of Sport - Jump right into the science behind sports. Test what your toes have to do with tennis and what your feet have to do with football. Make a new friend named CG Owl and find out what he has to say about sports. See how much air your lungs can hold. Make a helmet for your own crash test egg.

Sun, Wind and Rain - Investigate the elements as you discover what they do for gardens. Make your own sun visor so you will be protected from the sun. Become a weather artist using rain and wind as your tools!

How Does it Work?

Jr. Engineers - Check out shapes and why they are so strong! Investigate arches, and geodesic domes. Discover why an egg's shape is so strong and how you can find this shape in buildings. Test loads and build some bridges when you put on an engineer's hat and learn about structures.

Machine Mania - Find out how wedges, screws and levers help us with our daily lives. Use simple machines to complete different tasks like lifting weights and launching marshmallows. Run through an obstacle course and use teamwork to show how useful simple machines can be.

Shutterbugs - How does a camera work? What does a lens do? How do our eyes work? What is a camera obscura? How does film capture light and store an image? How did the idea of motion pictures start and how did early filmmakers figure out how to make images move? All these questions and more will be answered in this hands-on program wherein campers get to experience all aspects of photography.

Robot Concepts - Roll your way into robot science. Experiment with different robot designs, as you learn what makes a robot work. Invent your own robot designs using recycled materials.

Invent-i-nation - Become an engineer & invent your own science fun with moving motors, circuits & zip lines. Turn up the curiosity as you build your own Rube Goldberg inspired chain reactions using Newton's Laws, crazy chemistry, & electric circuits. The fun never ends because your inventions go home. The world needs inventors like you!

Eureka!

Rock Paper Scissors - Investigate the awesome inventions created before modern science had really begun. Learn about Leonardo da Vinci and discover how his ideas predicted future inventions. Explore catapults, trebuchets, and more of his amazing inventions during this action packed camp day.

Shipwrecked - Imagine finding yourself on a deserted island with only a few supplies. What better way to inspire your own creations? Add into the day a tsunami and a volcano and see how resourceful you can be using Ben Franklin's inventions as inspiration.

Think Fast - Inventors have always searched for a way to take flight. On today's journey we will use early inventors like the Wright brothers to launch into the wild blue yonder. The adventure starts on the ground and travels into space. Take flight during this fun-flying camp day.

Whiz Kidz - Team up with your fellow camp inventors to explore the inventions of others – such as kids, women, Rube Goldberg, and Thomas Edison. Draw inspiration from the “wacky” and the practical! The goal of this camp day is to understand that we have no limitations. Our dreams will inspire invention.

Science Fiction - Join the adventure to infinity and beyond on this fantastic day where science fiction meets science fact. As far back as Jules Verne and as recently as George Lucas, dreamers have explored what the future can hold. Many of those dreams are now reality. Sci-fi meets real inventors to help us explore how fiction can influence reality.

Secret Agent Lab

Discover Detection - Use your skills of listening, testing, and observation during this day of detection. We will investigate fingerprints, handwriting, and shoeprints to reveal the identity of our suspects. Listen to an audio crime story to learn clues needed to solve a mystery. Learn to view the story from all angles with a nifty new device.

Spy University - We will utilize spy gear such as metal detectors, spy ears, and motion sensors to hone our skills. Spies need to understand and use secret codes to pass along important information. Our Mad Science spies will investigate the dancing men code, Braille, and many other ways to share classified information. Use your new skills to write a message and digestively dispose of it before it can get into the wrong hands.

Sleuths on the Scene - As a spy you will need to learn how to process clues at a scene. Discover proper procedures as we use all of our senses to study and dissect debris for evidence. Our scientist spies will learn the art of the inflatable fingerprint as they discover perplexing partial and leftover latent prints.

Funky Forensics - Using forensics to evaluate evidence is a huge part of the spy business. Today we will analyze evidence with chemistry, collection skills, and spy tools. The correct conclusions are critical to solving the crime scene puzzle. We will identify acids and bases as well as synthetic blood samples in our forensic lab. Today all of your analytical skills will be tested.

Science of Security - Unlock your spy skill as we tackle the toughest security breaches. We will “pick open” locks, sneak past a “whisper-meter”, and create our own security system. Teams will attempt to crack through each other’s security systems and track a treasure.

Crazy Chemistry

Mad Messages - Discover how to send secret messages to your friends using special codes! Children learn how to talk with numbers, just like computers, and create their very own code "crackers"! In the afternoon, they become detectives and use their Mad Science observational skills to discover the writer of the "Mystery Letter"

Crazy Chemistry - Become a Mad Science chemist as you learn all about the chemistry things that you encounter every day in your house and school. Discover how chemical reactions are everywhere and how you can figure out if a chemical change has occurred right before your very eyes. Mix, mush and brew together different chemicals to create things that you can use in this hands-on outdoor chemistry lab.

Radical Reactions - What holds atoms and molecules together? What happens to these bonds during chemical reactions? Mad scientists will use this day to study chemical reactions in depth. These reactions will include those that give off heat (exothermic), reactions that require heat (endothermic), reactions

that proceed at a very fast pace, reactions that “go to far” and must try to return “home” (to equilibrium), and reactions that proceed in spite of the fact that they shouldn’t.

Chemical Counting - Explore fundamental “nuts and bolts” of chemistry, starting with the principle of “chemically counting” using the chemists’ unit of measure, a mole. Figure out the contents of a mystery solution using standard chemical reactions, and then campers will apply the principles of analysis in assaying real, off-the-shelf pain relief tablets for aspirin content. Cool molecular model building introduces chemical structure and bonding, and electrochemistry rounds out the day. The topics here range from creating electrical current using chemical systems (exactly as a battery does) to *plating* (chemically bonding) one metal onto another.

At the Scene of the Crime...The beginning of the day introduces the campers to the notion of observation and its importance as part of the scientific method. A mock crime scene is examined, information is presented in many formats, and the challenge is to sort and sift through the data in an effort to solve the "crime". Several forensic techniques are also employed toward this effort. The end of the day brings about a conclusion to the "crime", followed by a recap of the information and methods used to ascertain what actually happened.

N.A.S.A.

Earth and Beyond - The farthest reaches of our solar system and create a lunar eclipse in this “mad” planetary tour! Work out your escape velocity to get away from gravity and bring it home with a Gravity Assisted Launcher®. Next, go on a mission to explore the atmosphere on Earth, and beyond. Create a rainbow and make a sunset. Mix up various planetary atmospheres, one molecule at a time, and act out the weight of the atmosphere!

Astronaut-in-Training - Discover technology designed for outer space! Steer a laser beam through a laser maze, get a feel for radar technology, and discover everyday objects that were originally designed for use in space! Bring the excitement home with a Stereoscopic Viewer® with 3D images of space. Live the life of an astronaut as you suit up for space flight. Compare the temperatures on Neptune with Venus and practice an out-of-this-world team challenge!

Solar Launch - This stellar program is your ticket to the stars! Follow the life cycle of stars and see how constellations change when you travel across the galaxy. Learn to read a star chart and try your hand at following the skies to tell the time of year. Jump from star gazer to rocket scientist! Investigate the four forces of flight, and explore the science involved in rocket construction as you build your own Skyblazer Rocket® that you can take home!

Eye on the Sky - Come take a closer look at asteroids, comets, satellites, and other lights in the night sky. Bring far-away objects into focus as you learn about the power of mirrors and lenses. Build a Space Telescope® to take home and participate in a sky gazing marathon!

Space Voyage - Learn what it takes to be a true globetrotter! Race a balloon rocket and design your own car engine as you learn about thrust. See the principles of propulsion at work in a real rocket launch, and build your very own Space Copter® to fly to the skies!