**Mad Science**

**In Class Fieldtrips**

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*Sparkling Imaginative Learning*

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**Senses**
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- Harnessing Heat
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**And More...**
- Science of Illusion
- Detective Science
- Movie Effects
Take-on temperature. Build a thermometer and heat things up with friction. Feel how hot and cold can change at a touch. Apply your red-hot knowledge to your Heat Sheet.

SUMMARY:
In this class, children learn about the concepts of heat and heat transfer. They act out hot and cool molecule movements and experiment with a pair of unequal copper pipes to feel heat change. The children witness the practical side of heat-sensitivity—thermopaper browns under the force of a heat gun and ice cubes melt on a heat transfer block. Children get hands-on building thermometers, participate in a tactile temperature test, and heat things up in a thermometer-changing, sand-shaking session. This one-hour class warms down with a take-home temperature-sensitive card that reacts to hot hands!

EDUCATIONAL VALUE:
This class introduces children to the physic facts on heat. Children learn how molecules move at different temperatures and how thermometers work. The instructor uses various tools like a heat gun and thawing blocks to demonstrate how we use temperature sensitive equipment in our everyday lives. A series of interactive heat-induced experiments show how the hot and cold we feel is relative. Shaking up a bottle of sand shows how friction increases temperature. Children explore materials that transfer heat at different rates. The Heat Sheet is a temperature-sensitive card that children take home to extend their learning experience.

TAKE-HOME MESSAGE:
1 Friction creates heat.
2 We use thermometers to measure heat.
3 Hot molecules move around faster than cold ones.

TAKE-HOME PRODUCT:
Heat Sheet
**Lights, Color, Action**

*Catch some cool colors. Make a rainbow out of white light. Split your name with ink and reveal numbers with color filters. Color the world with the Technicolor Blender.*

**SUMMARY:**
This one-hour class sheds light on the properties of rainbow colors. Children observe demonstrations that blend colors to produce white light, and others that separate white light into colors. Experiments with prisms and diffraction lenses give children the opportunity to explore the color spectrum of various light sources. A chromatography activity provides an interesting demonstration of separating printed colors on a filter. The instructor leads an activity from white light to the ultraviolet range. Children look at the world through tinted lenses to experience color-blindness and see through the eyes of animals. A light-induced, optical effects demonstration device to take home completes this illuminating adventure!

**EDUCATIONAL VALUE:**
In this class, children enter the world of light and color. Exciting experiments on white light including color-wheel blending and prism-splitting spectrums introduce Newton’s color theory concepts. Children learn the differences between mixing colored light and mixing colored paint. Activities involving spectrosopes, ultraviolet light, and chromatography provide entertaining lessons on scientific techniques used to study the physics of light. Children build Technicolor Blenders to demonstrate Newton’s color wheel at home.

**TAKE-HOME MESSAGE:**
1. White light contains all the rainbow colors.
2. Objects absorb certain colors and reflect other colors.
3. We see the colors an object reflects.

**TAKE-HOME PRODUCT:**
Technicolor Blender
Explore the power of magnets. Create electromagnets and control a compass needle. See a magnetic accelerator in action. Grab a Magnet Lab for some at-home research.

SUMMARY:
This class reveals the science behind magnet magic and magnetism mysteries. Children use magnetic wands to explore magnetic fields’ attracting and repelling forces, confuse compass needles, and magnetize paper clips. Entertaining demonstrations illustrate the magnet's gravity-defying abilities and educate children about the Earth’s magnetic properties. Children continue the lessons at home with the Magnet Lab Take-Home.

EDUCATIONAL VALUE:
This class provides the basic physical principles governing magnetism. Children learn how and why magnets behave in such ways. They learn how to create magnets and how magnetism is lost. Children use compasses to gain a better understanding of how humans benefit from the Earth’s magnetic force. Hands-on experimenting—from swinging compasses to motorized devices allows children to explore the role of magnetism in our everyday lives.

TAKE-HOME MESSAGE:
1 Magnets have a north and south pole.
2 A magnetic field stretches between a magnet’s north and south poles.
3 Some metals rubbed with a magnet, magnetize.

TAKE-HOME PRODUCT:
Magnet Lab
Step into some healthy habits. Put together a food pie and lay out a perfectly proportioned meal. Burn calories and shake up an emulsion. Clip on your Step-O-Meter and walk on.

**SUMMARY:**
This class focuses on nutrition and fitness including the essential components of a healthy diet and lifestyle. Children participate in building a nutritional pie chart using life-sized food replicas and perform experiments to learn how our bodies fuel up on food. The children will also get to experiment with chemical mixtures called emulsions to learn how bile works. At the end of the program, the children will receive a Take-Home Step-O-Meter—a great fitness tool to measure step counts!

**EDUCATIONAL VALUE:**
This program introduces children to nutritional basics including the role of carbohydrates, proteins, and fats. The children will gain an understanding of how food provides energy for the body and how exercise plays an important role in energy levels. The program increases knowledge, stimulates motivation, and encourages healthy attitudes toward personal health, nutrition, and fitness.

**TAKE-HOME MESSAGE:**
1. The main food groups are grains, vegetables, fruits, milk, and proteins.
2. Each food group has its own portion size.
3. Digestion breaks down food to release the stored energy.

**TAKE-HOME PRODUCT:**
Step-O-Meter
Work against your eyes. Trick your brain with lines and coils. Discover how mirrors and their reflections can play tricks on what you see. Make a Periscope to see above and beyond.

SUMMARY:
This topsy-turvy class challenges children to see the physics of optical illusions. Children discover optical illusions as a twisting coil climbs up and down without moving, and when a towel turns into a dog! Children manipulate flexible mirrors and explore the world with inverted vision. Hands-on laminates provide children the opportunity to create their own illusions. Children construct a classic mirror illusion, the periscope as their TAKE-HOME PRODUCT.

EDUCATIONAL VALUE:
This class uses engaging demonstrations and activities to introduce children to the concepts of refraction, the science of optics, and the biology associated with sight. The instructor uses a wide variety of optical illusions like the mirror mirage, twisting copper coils, and convex and concave mirrors to demonstrate how physics can trick our eyes. Children use erasable markers to create a series of laminated paper illusions and explore the reflections of various mirror forms. The children build and take home a Periscope.

TAKE-HOME MESSAGE:
1 Optical illusions trick our brain with what we see.
2 A mirror can distort a reflection.
3 Lines can make optical illusions.

TAKE-HOME PRODUCT:
Periscope
Uncover the source of sound. Tap into sound waves and fill your ears with vibrations. Create sound effects and change the pitch of your voice. Use your Sonic Horn to make some noise.

SUMMARY:
This acoustic class fills an hour with music and all sorts of merry sounds! Engaging sound experiments and live demonstrations show the properties and transmission of sound waves. Children listen to sounds made with solid materials—from plastic to metal to string. Ingenious, unlikely objects transform handheld horns, metal screws, wooden ratchets and beads into a symphony of story sound effects. Electronic devices reveal frequency when a pitch-changing machine alters voices to gruff monsters or happy chipmunks. Children complete the class with their Sonic Horn Take-Homes.

EDUCATIONAL VALUE:
This class covers the characteristics of sound concepts and sound waves. Volunteers role play molecules to demonstrate sound wave motion. Children participate in producing and identifying acoustic sounds generated from a variety of materials. Electronic distortions link shifting frequencies to voice alterations. Children bring home a resonance chamber (Sonic Horn).

TAKE-HOME MESSAGE:
1 Sound moves in waves.
2 Vibrations cause sounds.
3 Different vibrations create different sounds.

TAKE-HOME PRODUCT:
Sonic Horn
Use your sense of taste. Magnify your taste buds and unplug your nose. Find your favorite flavor and try a carbonated taste test. Sort out the scents with the Scratch ‘n Match game.

SUMMARY:
This one-hour program encourages children to develop a taste for science! Children get hands-on with magnifying glasses, model tongues, and use mirrors to see what theirs look like. A quick-tasting test sorts out which class members are supertasters. The instructor provides a spoonful of knowledge to show sugar content in popular children’s drinks. A nose-plugging experiment links taste and smell, and the children scientifically sniff-out a set of extracted scents. The instructor demonstrates how drinks are carbonated, and children participate in a classic taste test. The Take-Home for this class is a Scratch ‘n Match sniff game.

EDUCATIONAL VALUE:
This workshop is an excellent introduction to the sense of taste and smell. Children use tools such as magnifying glasses and mirrors to compare the parts of their tongues with models. Children count the taste buds on their tongues to learn about taste sensitivity. The instructor demonstrates the sugar content in popular drinks and leads a discussion about taste changes as we grow older. A flavorful experiment introduces children to scientific protocol to examine extracted samples in test tubes. Children observe carbonation and taste test cola creations. Children bring home the Scratch’n Match – a kit that challenges children to use their sense of smell to sort out a set of cards.

TAKE-HOME MESSAGE:
1 There are taste buds on our tongues.
2 We need to smell in order to taste food.
3 It is easier to identify scents if we see what we smell.

TAKE-HOME PRODUCT:
Scratch ‘n Match
Charge up on static electricity. Make indoor lightning and conduct hair-raising experiments with an electro-static generator. Use your Static Stick on electrons at home.

SUMMARY:
In this class, children discover the world of static electricity. They will see sparks fly from an electrostatic machine, the Van de Graaff generator. Children rub feathers against their heads to create a static field. A sparking light demonstration shows the potential electrical power surrounding the generator. The instructor also tacks on a wig to the Van de Graaff to generate a brilliant, hair-raising display from the repelling forces of charged atoms!

EDUCATIONAL VALUE:
This class offers children a solid introduction to the properties of electricity and electric charges. Children discover an electric charge’s basic properties, learn to distinguish between static electricity and electrical current, and explore the science behind these phenomena. Hands-on activities provide a tactile lesson in charging and discharging objects with static electricity. Children will be able to relate a newfound understanding of lightning and static-electric shocks—that may have previously been confusing or even frightening—to their daily lives. They will learn how to protect themselves from electric shocks and lightning.

TAKE-HOME MESSAGE:
1 Static can happen when two objects touch.
2 Static happens when electrons move from one object to another.
3 Lightning rods protect tall buildings. They move lightning into the ground.

TAKE-HOME PRODUCT:
Mad Science Static Stick
Discover the mystery in chemistry! Explore one of the most exciting and fundamental sciences as you watch water turn into juice and liquids turn into solids. Explore physical and chemical reactions with the Dynamic Dish kit.

**SUMMARY:**
Children discover the mysterious wonders of chemical science. They learn the difference between physical and chemical changes through exciting, hands-on investigations; watch crystals form in water glass; and see acetone reduce foam to a puddle of goo. Children get their hands dirty with a non-Newtonian fluid and use hydrophobic compounds to make marbled masterpieces! The Dynamic Dish Take-Home lets children bring the lab home.

**EDUCATIONAL VALUE:**
Che-mystery introduces children to chemistry with mysterious mixtures and surprising solutions. They learn that physical changes are different from chemical reactions because chemical reactions create new products. Crystals, colloid suspensions, solutions, and indicators are all part of this fun, information-packed class. Children learn the importance of lab safety and get hands-on with some amazing reactions.

**TAKE-HOME MESSAGE:**
1 Chemistry is the study of substances.
2 A physical change happens when substances are mixed but do not change.
3 A chemical change happens when mixed substances create something new.

**TAKE-HOME PRODUCT:**
Dynamic Dish
Take a tour on the electron freeway! Investigate conductors, insulators, and other elements in the world of circuit electricity. Get turned on to science and technology with the Circuit Maze kit.

**SUMMARY:**
Children get charged up about the science of current electricity! They learn how tiny invisible particles—electrons—power everything from the fridge to the radio. All their problem-solving skills are put to use to create series and parallel circuits. Completing the circuit lights a bulb and sounds a buzzer. Once children master circuits, they learn about insulators, conductors, and experiment to find out what conducts. Using their new know how helps solve mysterious hidden connections. Children build and take home a Circuit Maze to test their family and friends.

**EDUCATIONAL VALUE:**
This electrifying class teaches the fundamentals of current electricity. Children explore electrons and cooperate to create real series and parallel circuits. A bursting balloon illustrates how a fuse works, and children test their knowledge of what conducts with a conductivity tester. Newfound expertise helps them decipher the hidden connections in an inference box. At the end of the class, children build and take home their very own Circuit Maze to learn about circuits.

**TAKE-HOME MESSAGE:**
1 Electricity is the energy of moving electrons.
2 A circuit must be a complete loop.
3 Most metals are good conductors.

**TAKE-HOME PRODUCT:**
Circuit Maze
What do gravity, inertia, and centripetal force have in common? They are all part of the fun in this introduction to physics. Feel the pull of precession with the bike wheel gyroscope, and strike the perfect balance with the Gravity Game kit.

SUMMARY:
Find out what makes the world go around in an entertaining introduction to the basic concepts of forces. Sir Isaac Newton would be proud when young scientists investigate his law of inertia. Children experiment with mass and balance using their own centers of gravity. A comparison between rubber and dough balls brings the physical effects of forces to light. Gyroscopes, bike wheels, and toy racetracks reveal the concepts of precession and centripetal force. Children leave with a thirst for physics along with their very own Gravity Game Take-Homes.

EDUCATIONAL VALUE:
Fun-damental Forces introduces children to the pushes and pulls that make the universe tick. Gravity, inertia, and centripetal force are some key concepts they discover along the way. Some exciting, hands-on investigations into forces include the bike wheel gyroscope, a coin-spinning vortex, and the balloon centrifuge. This program lays the foundation for further study in the physical sciences.

TAKE-HOME MESSAGE:
1 A force is a push or pull.
2 An object keeps moving or stays still unless a force acts on it.
3 Centripetal force makes objects move in a circle.

TAKE-HOME PRODUCT:
Gravity Game
Learn the science behind illusions, read minds, and perform a Houdini-style escape! Amaze and amuse friends and family with the Curious Cube kit. It’s not magic—it’s science!

SUMMARY:
Science of Illusion leaves children astounded, amazed, and educated! They learn how magicians use our assumptions and perceptions about how the world works to entertain us. Discovering how to make objects disappear and reappear using optical illusions, polymers, mirrors, as well as hidden compartments, sleight-of-hand, and misdirection are part of the learning experience. The art of escape with Houdini’s chains and the power of perception with the crayon mind-reading trick are a few classics. The Curious Cube Take-Home lets children bring home the magic to mystify their friends and family.

EDUCATIONAL VALUE:
Science of Illusion introduces children to a wide variety of scientific topics, challenging them to think logically and scientifically. Natural curiosity leads the way to the ultimate in inquiry-based learning as children ask, “How did they do that?” Scientific concepts ranging from optics to optical illusions and the importance of observation to the chemistry of hydrophilic polymers are investigated. Building an illusion box with a hidden mirror teaches about the science of optics. There are many illusions for children to see and try as they unlock the secrets of the science of magic.

TAKE-HOME MESSAGE:
1 Magicians need to know some science.
2 Magic confuses what we sense with what we know.
3 Science and magic both require good observation skills.

TAKE-HOME PRODUCT:
Curious Cube
Fly through flight and aerodynamics basics! Discover the four forces that affect flight. Make and test various plane designs to see these forces in action! Build the Sky Hawk Foam Plane glider and fling it forward!

**SUMMARY:**
Stunt Planes and Gliders flies children through flight and aerodynamics basics. Children discover the four forces that affect flight: lift, thrust, gravity, and drag. They make and test various plane designs to see these forces in action. Children fold and fly the Delta Dart plane. Shooting the Stunt Flier plane straight up makes it loop back! They make a Rotor Kite twist and an airship twirl. A fast-flying, spinning cylinder gets launched into a tough target. Children build the Sky Hawk Foam Plane Take-Home and fling it forward!

**EDUCATIONAL VALUE:**
Stunt Planes and Gliders provides children with a combination of practical experiences and theoretical knowledge in aerodynamics. They learn that lift, thrust, gravity, and drag affect an aircraft’s flight. Children construct various paper airplanes to observe these forces at work. The Delta Dart, Rotor Kite and Twirling Dirigible are a few designs children fold, fling, and drop. Adjusting the Stunt Flier’s control surfaces allows children to send the planes flying in different directions. Children make, test, and take home a rubber band powered plane that cuts through air with ease.

**TAKE-HOME MESSAGE:**
1 Lift and thrust forces push up and move aircraft forward.
2 Gravity and drag forces slow and pull down aircraft.
3 Control surfaces change an aircraft’s direction.

**TAKE-HOME PRODUCT:**
Sky Hawk Foam Plane
Act like junior architects and engineers! Test out shapes for strength. See if a paper column can withstand the Column Collapser apparatus! Construct a structure from scratch with the Bridge Basics kit.

SUMMARY:
Super Structures lets children act like junior architects and engineers! Children push and pull their partners’ hands to learn about compression and tension, and strengthen a sponge beam with knitting needle rods. A tension test lets children determine the toughest textile. They test out shapes for strength, and then watch to see if a paper column can withstand the Column Collapser! They build a Roman arch block bridge too! Construction continues at home with the Bridge Basics Take-Home.

EDUCATIONAL VALUE:
Super Structures introduces children to the fascinating science of architecture and engineering. They learn about structures, the forces behind them, and shapes and materials that strengthen them. Images of real-life structures reinforce these concepts. Children take home a bridge-building kit. They use the included components to strengthen a basic bridge structure.

TAKE-HOME MESSAGE:
1 Structures hold up, span, or enclose things.
2 Structures must stand up against push and pull forces.
3 Strong shapes used in structures are triangles, cylinders, and arches.

TAKE-HOME PRODUCT:
Bridge Basics
Under Pressure

Join Bernoulli as we take an exciting look at the science behind air pressure. Create a whirlwind with an Airzooka vortex generator, and make pucks and balls levitate with air pressure! Launch foam rockets with the Air Blaster kit.

SUMMARY:
Under Pressure is an exciting immersion in the science of air pressure and Bernoulli’s principle. Children enjoy the exciting tale of the Viking ship while learning about thermodynamics and weather systems. A hopping, hovering table tennis ball lets children experiment with unbalanced air pressure. Air-blasting Airzookas are a fun way to understand the physics of breathing. Children apply their knowledge to overcome gravity using compressed air, and they will take home their very own Air Blaster foam launchers.

EDUCATIONAL VALUE:
Under Pressure introduces children to the exciting science of air pressure and a host of associated scientific concepts including aerodynamics, the science of flight, thermodynamics, and Bernoulli’s principle. Children learn that air is all around us, and vital to life on Earth.

TAKE-HOME MESSAGE:
1 The air around Earth pushes on us. It is called the atmosphere.
2 High-pressure air moves towards low-pressure air until they balance.
3 Bernoulli’s principle states that the faster a gas flows, the less it pushes.

TAKE-HOME PRODUCT:
Air Blaster
Simulate the effects of an ocean oil spill, and develop creative techniques to clean it up! Create your own Rescue Diver tool while learning about water, waves, and the environment.

**SUMMARY:**
Children make waves with Wacky Water and immerse themselves in some wet and wonderful science. Sinking soda introduces density. The investigation continues with liquid layers in the Density Stacker activity. Children apply their knowledge to real-world problems such as oil spills. How hard are they to clean up? Children find out for themselves, and then build and keep their very own Rescue Diver Take-Homes.

**EDUCATIONAL VALUE:**
Wacky Water introduces children to the properties of water. Children explore this fascinating fluid’s many facets including density, water as the universal solvent, water pollution, and wave motion. Water is a remarkable substance. It covers more than three quarters of Earth’s surface—and no life on Earth could survive without it. Yet, besides water’s two other states (steam and ice), children know little about its other properties. The Wacky Water program lets them get their feet wet and wade into a wider study of this all important compound.

**TAKE-HOME MESSAGE:**
1 Water exists on Earth as a solid, liquid, and gas.
2 Less dense matter floats on denser matter.
3 Water is important for life on Earth.

**TAKE-HOME PRODUCT:**
Rescue Diver

SUMMARY:
Children get engrossed in entomology! They find out that insects are arthropods and inspect authentic insect specimens. Insect anatomy is introduced and examined up close. A container of creepy crawlers is divided into insects and non-insects. An ultraviolet powder demonstration lights up the truth on how insects spread pollen. Children learn how insects adapt by building insect puzzles at habitat stations. They examine a bag of insect defense representations and choose the one they want. An Insect-A-Vision Take-Home kit allows the junior entomologist to get bug-eyed at home!

EDUCATIONAL VALUE:
Children are introduced to the world of entomology. Examining real specimens and models help children familiarize themselves with insect anatomy. They discover that insects have specific body parts that set them apart from other arthropods. An insect habitat match-up helps children understand how insects adapt to their environment. They learn how insects defend themselves and pollinate plants. Children see from an insect’s point of view with an interchangeable lens viewer to take home.

TAKE-HOME MESSAGE:
1 Insects are part of the arthropod group.
2 Insects have a head, thorax, abdomen, and six legs.
3 Insects see differently than us.

TAKE-HOME PRODUCT:
Insect-A-Vision
Help crack a case. Inspect fingerprints, mystery powders, ink samples, and teeth impressions. Create a composite from memory. Use the Personal Profile to build an identity kit.

SUMMARY:
Children use science to crack a case! The crime happens just before the Bustertown bakeoff. Mr. Baker’s big, fat, chewy, chocolate chip cookie is sabotaged and his recipe is stolen. The case kicks off with a crime scene investigation. The children examine fingerprints, mystery powders, ink samples, and teeth impressions. They also practice their memory skills to create a composite! Analyzing all the evidence is what helps pinpoint the perpetrator. The children take home a Personal Profile kit. They can use it to record their own fingerprints and other important information.

EDUCATIONAL VALUE:
Children are introduced to the science techniques used to investigate and analyze crime scene evidence. The children begin their training by observing a fictional crime scene. Their inquiry continues with a mystery powder analysis, fingerprint examination, ink separation investigation, and teeth impression match-up. They create a composite of a perpetrator from memory and then analyze all the evidence to determine which suspect committed the crime. They take home a kit to record their own vital information.

TAKE-HOME MESSAGE:
1 Detectives make observations and ask questions.
2 Forensic scientists test evidence.
3 We all have unique fingerprints and teeth marks.

TAKE-HOME PRODUCT:
Personal Profile
Dig into Earth Science! Uncover rock samples and discover how they formed. Inspect fluorescing minerals. Model the moving plates that cause bends and breaks. See how sediment stacks with the Experi-tube.

SUMMARY:
Children dig-in to Earth science! Earth’s layers are introduced with a spotlight on its outer rocky layer. Children check out three rock samples to find out how they were made and where they were formed. They inspect minerals with an ultraviolet light to see them fluoresce. They model the moving plates that cause bends and breaks in the Earth’s solid rock layer. Tremors are created to tip a tower, and then things get rocky with the Experitube Take-Home. Children can make it and shake it to see sediment settle into layers!

EDUCATIONAL VALUE:
Children are introduced to the science of geology. They examine three different rock types and learn how and where they formed. Children investigate tectonic plates and learn how their movements cause stress on the Earth. They discover that these movements can cause mountains to form, earthquakes to occur, and volcanoes to erupt. The children make and take home a sedimentator. It reinforces the concept of sedimentary rock formation learned in class.

TAKE-HOME MESSAGE:
1 The Earth is made up of three layers. One layer is solid rock.
2 The top layer has moving plates. These moves cause the solid rock layer to bend and break.
3 Sedimentary is one rock type. Rocks go through changes.

TAKE-HOME PRODUCT:
Sedimentary Stacker
Cook up a chemical reaction! Blow up a balloon with yeast. Go on a nutrient hunt. Act out digestion from start to finish. Get a glimpse of your guts-in-action with the Digestor Inspector.

**SUMMARY:**
Children get clued in on the chemical reactions that occur when they prepare, analyze, and digest their food. The class gets cooking with a color-changing solution display. Children divide common kitchen activities into chemical and physical reactions. A balloon blow-up demonstration helps them discover that yeast makes bread rise. Children test food samples in search of nutrients, starch, and protein. They discover what happens after they eat and digest nutrient-rich foods with their own Digestor Inspector Take-Home.

**EDUCATIONAL VALUE:**
Children are introduced to the differences between chemical and physical reactions. The instructor demonstrates how yeast feeds on sugars to produce a gas-filled balloon. The children test food samples for starch and protein and learn that certain foods help us grow, develop, and function. They familiarize with digestion—the process that occurs after they eat. The hands-on, clear digestive-track model extends this concept at home!

**TAKE-HOME MESSAGE:**
1 Chemical changes happen in the kitchen and in our bodies.
2 The food we eat gives us energy, helps us grow, and controls our bodily functions.
3 Digestion is how our body breaks down and uses the food we eat.

**TAKE-HOME PRODUCT:**
Digestor Inspector
See how simple machines lighten your load! Launch with levers, secure with screws, and work with wedges. Use pulleys to move heavy objects with ease. Wind-up the Drag Racer for some zooming action.

**SUMMARY:**
Children discover how simple machines make our lives easier. They learn about the six different types of simple machines: the screw, lever, inclined plane, wedge, pulley, and wheel and axle. Children launch with levers, secure with screws, and work with wedges through hands-on activities! A large child-operated pulley system demonstrates how pulleys help us move heavy objects easily. Children apply their newfound mechanical knowledge by building their very own Drag Racer Take-Home!

**EDUCATIONAL VALUE:**
Mad Machines introduces basic physical science. Children investigate mechanics and the role that they play in our everyday lives. Children learn about forces and work, and discover that simple machines make work easier by allowing us to push and pull less strenuously, but over a longer distance. They will extend this concept at home with the Drag Racer, a car model complete with wheels and axles.

**TAKE-HOME MESSAGE:**
1 Simple machines make work easier.
2 The six simple machines are the screw, lever, inclined plane, wedge, pulley, and wheel and axle.
3 All complex machines have simple machines in them.

**TAKE-HOME PRODUCT:**
Drag Racer
Discover why science is the real star on the big screen. Create cool sound effects. Toy with 3-D technology. Make motion pictures come alive. Sketch a short feature in the Cartoon Creator flipbook.

SUMMARY:
Movie Effects gives children a chance to sit in the director's chair and discover why science is the real star on the big screen. Exciting demonstrations and hands-on activities allow children to discover the science behind the amazing sound and weather effects from their favorite movies. Children investigate 3-D technology, and experience how this effect can make them feel like part of the action. Motion pictures come alive with a spinning praxinoscope. Children use the Cartoon Creator to make their own mini movie flipbooks that they can take home.

EDUCATIONAL VALUE:
Movie Effects is an exciting introduction to the science involved in the spectacular special effects and technology that are behind motion picture magic. Children learn the science applications in filmmaking, from the chemistry of movie snow, to the acoustics of Foley artist sound effects, to the optics of 3-D technology.

TAKE-HOME MESSAGE:
1 Our eyes and brains join fast-moving still pictures in movies.
2 Science helps create special effects for movies.
3 Things seem to jump out in 3-D movies because two pictures overlap.

TAKE-HOME PRODUCT:
Cartoon Creator
What makes toys work? Move out of the way for motorized toys. Take a spin with kinetic tops. Balance a bird to reveal its center of gravity. A twist of the wrist sets your Yo-yo spinning!

SUMMARY:
Children test, play, and ponder over what makes toys work. They spin into action with kinetic top toys. One changes color and one flips over, but they all release stored energy. Children balance bugs and birds to reveal their centers of gravity. They learn that opposites attract with magnetic toys and then take a turn at creating a gear train. Don’t forget to move out of the way for The String Thing—it’s motorized! The class winds down with a Yo-yo Take-Home.

EDUCATIONAL VALUE:
Children are introduced to the science of toys through toy-themed centers. Both familiar and novel gadgets are investigated. They discover how motors make toys move, and play with tops to learn about potential and kinetic energy. Balancing toys are used to familiarize children with the center of gravity. They find out that opposite poles attract each other when experimenting with magnetic toys. Their energy investigation continues at home with the Mad Science Yo-Yo.

TAKE-HOME MESSAGE:
1 We can play with toys to find out how they work.
2 We can use science to explain how toys work.
3 Some toys use stored energy to move.

TAKE-HOME PRODUCT:
Yo-Yo
Get weather-wise. Uncover the reason for seasons. Create three-day weather forecasts. Stage a statically-charged indoor storm. Spot the sun’s invisible UV rays with the Sun Beads kit.

**SUMMARY:**
Children get weather-wise in this climate-controlled class! A demonstration using heat sensitive paper and a flashlight brings to light the reasons for seasons. Children discover how air affects weather, and perform a test to prove that air is everywhere. Children try out tools that meteorologists use to measure weather. They create three-day weather forecasts for cities around the world and stage a statically charged indoor storm. Children take home the color-changing Sun Beads kit to detect ultraviolet light from the sun.

**EDUCATIONAL VALUE:**
Children conduct hands-on experiments to understand how and why weather occurs. They find out that seasons change as the Earth tilts toward and away from the sun. Children learn that air affects weather. They perform experiments to prove that air has mass and takes up space. After learning that water in the air affects the weather, children recreate the water cycle and mimic a rain cloud. They try out meteorology measurement tools and act like weather reporters. Children learn that ultraviolet light can cause sunburns. They make and take home a color-changing ultraviolet light detector.

**TAKE-HOME MESSAGE:**
1. Air is all around us. Air changes affect the weather.
2. Meteorologists study weather so they can warn us ahead of time.
3. Too much UV light can cause sunburns

**TAKE-HOME PRODUCT:**
Sun Beads
Use your hands as a real Mad Scientist in this whirlwind class on how a lab works! Learn to manipulate laboratory equipment at your personal lab bench, and take home your very own Graduated Gear to continue your research!

SUMMARY:
Students become lab scientists-in-training in this whirlwind program on laboratory techniques! Each student will learn to manipulate an assortment of lab equipment in a series of hands-on activities. They will learn to transfer droplets using a pipette, and larger quantities using a stirring rod. They will also learn to swirl with an Erlenmeyer flask. The one-hour program ends with a cool demonstration by the instructor to show off the lab techniques learned in class. The students will continue lab training with their Take-Home Graduated Gear kit.

EDUCATIONAL VALUE:
This program introduces the basic tools and techniques that scientists use in the laboratory. The students will develop their scientific vocabulary and fine-motor skills as they learn to manipulate instruments scientists have created for lab work. As the instructor demonstrates more complex experiments, students will also learn to make a hypothesis based on their observations and techniques learned during the class.

TAKE-HOME MESSAGE:
1 The tools that scientists use in a lab have names and particular functions.
2 Water sticks because it is adhesive.
3 Scientists make observations before making conclusions.

TAKE-HOME PRODUCT:
Graduated Gear
Create a tiny world of atoms with your very own set of Atomic Coins! Learn to recognize chemical reactions and mix up a few reactive ingredients for some sensational results!

SUMMARY:
In this class, students are introduced to the concepts of atoms and reactions! A demonstration of the differences between physical and chemical reactions is followed by a hands-on series of experiments. The relative size of an atom is introduced in a cutting edge race as the children try to reduce a strip of paper down to its atomic size! The class wraps up with a creative molecular session. The children explore how atoms join together and how molecules react using their Take-Home Atomic Coins kit.

EDUCATIONAL VALUE:
This class provides a basic lesson on the atomic make-up of matter. Students will perform experiments and analyze their results to differentiate between the chemical and physical changes that may occur in a reaction. The children can create model molecules and use them to follow the atomic rearrangements that occur in a chemical reaction.

TAKE-HOME MESSAGE:
1 Combining atoms together creates molecules, and groups of different molecules form chemicals.
2 When different chemicals are mixed together, they create different results.
3 If you know what clues to look for, you can explain the results of an experiment either as a chemical or physical change.

TAKE-HOME PRODUCT:
Atomic Coins
Slide down the colorful pH scale and dip into the world of acids and bases! Explore the pH extremes with your Reaction Tube Kit in what is sure to be a popping experience! Discover whether liquids found in your home are acids or bases using your personal pH Paper!

**SUMMARY:**
Students explore the crazy chemistry of acids and bases in this fascinating one-hour program on the pH scale. The pH Phactors hydrogen and hydroxide give a colorful introduction, and the Phantastic pH test is applied to common household chemicals. Students are challenged to bring a mystery liquid to a perfect pH balance. The Phestival ends with a Stopper-Popper reaction!

**EDUCATIONAL VALUE:**
Children are introduced to the concept of pH, acids, and bases through a series of engaging, inquiry-based experiments and exciting demonstrations. These concepts are applied using household items to improve children’s understanding of the nature and purpose of the chemicals they often encounter. They learn how household chemicals are safely handled.

**TAKE-HOME MESSAGE:**
1. Acids are liquids which have particles called hydrogen ions, and bases are liquids which have particles called hydroxide ions.
2. The hydrogen ions in a liquid are what change the color of a pH indicator.
3. Acids and bases react together in a chemical reaction.

**TAKE-HOME PRODUCT:**
Reaction Tube
Ooze into a gooey hour of sliming around! Create slime using the Mad Science recipe, and then enter the Slime Olympics! Take home your own concoction of Mad Science Slime!

**SUMMARY:**
The Mad Science slime recipe is revealed in this ooey gooey chemistry class! Students will learn about slime and its basic ingredients in a series of hands-on activities. *Polymer* paper clips and *cross-linking* magnetic marbles will help to examine the key components of slime. Varied concoctions of slime will stir up in scientific style, and the properties of slime will be tested in a team-spirited fashion at the Slime Olympics!

**EDUCATIONAL VALUE:**
Slime Time provides an entertaining lesson on polymers and their properties. These relatively complex chemistry concepts are introduced to elementary school-age children in tactile, visually-engaging experiments. Students create cross-linked polymers based on their observations of the properties of polymers and cross-linking agents.

**TAKE-HOME MESSAGE:**
1. Mixing a polymer and cross-linker forms a cross-linked polymer called slime.
2. The property of slime changes when the quantity of the ingredients changes.
3. Using different polymers and cross-linkers create different crosslinked polymers.

**TAKE-HOME PRODUCT:**
Mad Science Slime
Hop on board the chemistry express for a high-speed science experience! Perform instantaneous experiments in this fast-paced class on split-second reactions that go like mad! Pick up an Action Flask kit and have a blast!

**SUMMARY:**
Children take a trip through several fields of chemistry and discover the factors that can change the rate of a reaction. The class begins with a role-playing activity in which volunteers act out two different rates of reaction. This is followed by a hands on demonstration on oxidation where the role of salt—as a catalyst—is observed. The instructor demonstrates quick-acting reactions such as precipitation and acid-base reactions, followed by a balloon-expanding experiment to test limiting reagents (factors). Children will explore crystallization and receive a Take-Home Action Flask kit to perform more experiments. The class wraps up with a color-changing electrolysis demonstration that covers these cool chemical concepts.

**EDUCATIONAL VALUE:**
This class introduces the factors which determine chemical rates of reaction. Several fields of chemistry will be presented, and students will explore the many ways in which different chemical processes can be sped up through the use of catalysts. The concepts demonstrated in this class will encourage students to link experimental factors with a chemical rate of reaction. Students will participate in hands-on activities and view demonstrations on various chemical rates of reaction.

**TAKE-HOME MESSAGE:**
1. Some reactions need more stimulus than others.
2. Chemicals get used up in a chemical reaction.
3. Some reactions are reversible.

**TAKE-HOME PRODUCT:**
Action Flask
Discover amazing things that glow bright in the dark and come to light! Probe the properties of light and explore some unusual applications of glow-in-the-dark technology!

**SUMMARY:**
This class concentrates on how we perceive light and its effect on objects. The concept of how colors are perceived in white light is presented using a hands-on, tricolor experiment. Next, the nature of fluorescence and phosphorescence are unveiled in a black light demonstration. A discussion on the commercial applications of glow-in-the-dark products is followed by a challenge to find fluorescing materials among common objects. Chemiluminescence is demystified using a flashlight analogy. The students take part in a role-playing game that provides them with an understanding of the security features used in making real money.

**EDUCATIONAL VALUE:**
This class introduces children to the luminescent properties of natural and synthetic materials. These concepts will be presented through a hands-on exploration of household objects, paper products, and earth minerals. The children will be given a brief history of fluorescence followed by a demonstration of chemiluminescence, the chemical aspect of luminescence. This program wraps up with a thought-provoking discussion and an activity on the applications of the science of light.

**TAKE-HOME MESSAGE:**
1. An object is the color that it reflects. All other colors, besides the one(s) the object reflects, are absorbed by the object.
2. An object that shines a different color under black light is fluorescent.
3. The only way to see fluorescence in an object is to shine a black light on it.

**TAKE-HOME PRODUCT:**
Currently in development, ask for details
Stick it to the walls, and push the power of tape to the limits in this adhesive hour on things that cling!
Build a bond with glue and get attached to Professor Beakerdude!

SUMMARY:
Children will get stuck on science in this one-hour class on sticky stuff! The class begins with a close-up examination of how Velcro hook-and-loop fasteners work. This is followed by a hands-on experiment with different types of tape adhesives. Wet glues are introduced in two inquiry-based experiments. Children learn how to perform a ranking test, and determine the optimal glue to use on various materials. A hands-on activity using scientific labware and everyday items introduce the concepts of suction, hydrogen bonding, and static cling. The children assemble their Take-Home Professor Beakerdude kit, a set of reusable adhesives and a beaker that they can use to perform experiments.

EDUCATIONAL VALUE:
Students will be given the opportunity to perform inquiry-based experiments to test the properties of adhesive objects. They will develop an understanding of the science of sticky elements and practice hands-on activities to explore the nature of natural and synthetic adhesive materials.

TAKE-HOME MESSAGE:
1 Different types of adhesives are used to stick different materials together.
2 The liquid part of the glue needs to dry before the adhesive part can stick objects together.
3 Adhesives won’t bond to objects if the sticky part collects dirt from our fingers.

TAKE-HOME PRODUCT:
Professor Beakerdude
Manipulate matter in all of its three states! Melt metal in boiling water and freeze water with just a breath of dry ice! Use your Thermocolor Cup to test the temperature of liquid matter in your home!

SUMMARY:
Children in this class will probe the shifting states of matter through a series of engaging demonstrations and inquiry-based activities. The class warms up with a molecular movement exercise to learn about the three states of matter. Next, students observe melted and resolidified metal—a shift of states from solid to liquid right before their eyes. Dry ice—the star of the show—used in a series of tests, under the guidance of the instructor, explores the properties of matter at extreme temperatures. Children use balloons to help visualize the volumetric difference between matter in solid and gaseous states. The class rolls toward a grand finale that engages the group in catching a cloud!

EDUCATIONAL VALUE:
Children will understand the concept of matter in its three states through visual and tactile experiences. They will learn both how and why matter changes between the different states and develop a good understanding of matter’s elementary physical principles. Children will be able to relate the concept of matter to their world. They will receive the Take-Home Thermocolor Cup and Home Lab to continue experimenting with the states of matter.

TAKE-HOME MESSAGE:
1 There are three states of matter.
2 Adding heat can change solid to liquid, and liquid to gas.
3 Removing heat can change gas to liquid, and liquid to solid.

TAKE-HOME PRODUCT:
Thermocolor Cup
Dry ice is cold (-79 degrees Celsius) and cool! Observe it in solid form and sublimating. Observe it make metal sizzle, jump and rattle. Kids experience cool demonstrations like “The Big Burp”, potions that ooze gas clouds, a bubble shower of opaque carbon dioxide and a big fog cemetery movie effect. Make Insta-Snow to take home.

SUMMARY:
Students will be introduced to the concept of matter, and the properties and characteristics of its three most common manifestations: solids, liquids and gases. Using water as an example, they will learn how, why, and in which progression matter usually transforms from one state to another. Students will then learn of a lesser known phenomenon called “sublimation,” whereby a solid turns directly into a gas without ever becoming a liquid. Then, they will see it in action with dry ice!

EDUCATIONAL VALUE:
Children will be shown what happens to dry ice when it is exposed to an object at room temperature, and will observe its amazing cooling ability. With the concept of sublimation explained, the class will explore the phenomenon’s end product: carbon dioxide. The children will then enjoy the lighter side of carbon dioxide and dry ice, watching it pop a cork off a flask and blow smoky bubbles! In the presentation’s exciting conclusion, students will see for themselves how dry ice makes for a great prop in scary scenes in movies! This class offers children a solid introduction to the three states of matter and their properties. They will learn how and why matter changes between the different states, and will have a good understanding of elementary physical principles. The children will be able and eager to tell any inquiring adult all about carbon dioxide—in its solid or gaseous state! Perhaps most importantly, this lesson relates the material to the students’ lives and school curriculum: they will leave with an understanding of the science behind the water cycle, carbonation, and even Hollywood special effects!

TAKE-HOME MESSAGE:
1 There are three states of matter.
2 Adding heat can change solid to liquid, and liquid to gas.
3 Removing heat can change gas to liquid, and liquid to solid.
Explore the farthest reaches of our solar system and create a lunar eclipse on our home planet. See the size difference between the Earth and its moon. Build your very own Mad Science® Gravity Assisted Launcher to simulate how gravitational pull affects a probe in space.

SUMMARY:
In this class, children set off on a voyage to discover the Solar System. They impersonate the planets to compare their sizes and distances from the sun, recreate a solar and lunar eclipse, and work out the relative size and distance of the Earth and its moon. Children learn how rockets escape the pull of gravity and build a Mad Science® Gravity Assisted Launcher game to send probes into space!

EDUCATIONAL VALUE:
In Planets and Moons, children use models and scaling in order to understand the relative size and distance of objects in our Solar System. Children experiment with eclipses and learn just how far away our moon is! Children learn about the forces needed to escape gravity. They then build a Mad Science® Gravity Assisted Launcher set to send a metal sphere across a model solar system.

TAKE-HOME MESSAGE:
1 A lunar eclipse happens when the Earth casts its shadow on the Moon.
2 The smallest planets are made up of rocks. The largest are made up of gases
3 The scientist Johannes Kepler figured out how the planets move in our solar system.

TAKE-HOME PRODUCT:
Mad Science® Gravity Assisted Launcher
We're on a mission to explore the atmosphere on Earth, and beyond! Travel to the end of the rainbow and make a sunset. Mix up various planetary atmospheres, one molecule at a time. Discover how NASA monitors planetary weather by using your very own Mad Science® Meteorological Station!

**SUMMARY:**
In Atmosphere and Beyond, children discover the properties of the air around us and explore the atmosphere of Earth, and those of planets beyond. Children are challenged to keep Arny the Aquanaut dry during an underwater walk, and to create their very own sunset. After assembling the atmospheres of other planets, they build their very own Mad Science® Meteorological Station so they can monitor weather patterns here on Earth!

**EDUCATIONAL VALUE:**
In this Earth-science-focused program, children gain an understanding of the importance of the atmosphere for life on Earth, and compare the composition of Earth's atmosphere with those of other planets in the solar system. They learn what it takes to make a planet viable for life as we know it, and explore the effects of atmospheric particles on the color of sunsets and rainbows. Finally, they have a chance to build a Mad Science® Meteorological Station to monitor the weather patterns caused by the interaction of Earth's atmosphere and the Sun's energy.

**TAKE-HOME MESSAGE:**
1. The Earth's atmosphere is mainly made up of oxygen, nitrogen, and argon.
2. The rainbow happens when the sun shines through an atmosphere full of water drops.
3. Real stars twinkle because the atmosphere bends their light before they reach our eyes. There is no atmosphere on the Moon, so the stars do not twinkle!

**TAKE-HOME PRODUCT:**
Mad Science® Meteorological Station
Probe the mysteries of meteors and bounce around satellite light in this phenomenal program on space events. Take home a Mad Science® Space Telescope to explore faraway objects just like the satellites orbiting around the Earth!

SUMMARY:
In Space Phenomena, children explore the phenomenal events that take place in the night sky. Children will create their own impact craters, and observe model meteors fall through a model atmosphere. After a friendly game of satellite tag using reflected light, children watch a model comet form right before their eyes. Children work with lenses to focus far away objects on a screen and then create a Mad Science® Space Telescope to seek out space phenomena from home.

EDUCATIONAL VALUE:
Space Phenomena introduces children to phenomenal space events. Children investigate asteroid impacts and meteors, learn to differentiate the lights of airplanes from those of satellites, and explore the composition and nature of comets! They learn the physics of telescopes and construct a Mad Science® Space Telescope model to take home.

TAKE-HOME MESSAGE:
1. Objects in the sky can be identified by their speed, size, and color.
2. Most meteoroids burn up in the atmosphere before they reach the Earth.
3. Comets are frozen water, gases, dirt, and dust.

TAKE-HOME PRODUCT:
Mad Science® Space Telescope
This stellar program leads you through the life cycles of the stars! Learn about our star, the sun, and see stardust form. Use your Mad Science® Cosmic Disk and newfound knowledge about the constellations to navigate the night sky!

**SUMMARY:**
In this class, children investigate our sun and other stars in our and other galaxies. They will follow stellar life cycles and view the stars from different angles of the universe. Children will learn the reasons for constellations and practice navigating by the stars. They bring home a Mad Science® Cosmic Disk to guide their night time stargazing.

**EDUCATIONAL VALUE:**
This after-school program introduces children to stars (including our own) and the galaxies they form. Children learn about the facts of our sun and examine various stellar life cycles. They construct a three-dimensional constellation to understand the location of stars in our and other galaxies. Children learn to navigate by the stars and take home a star chart on a Mad Science® Cosmic Disk to encourage their stargazing studies.

**TAKE-HOME MESSAGE:**
1. Galaxies are clouds of billions and billions of stars.
2. Our galaxy is called the Milky Way and our star is called the Sun.
3. Stars go through different life stages over the course of billions of years.

**TAKE-HOME PRODUCT:**
Mad Science® Cosmic Disk
This is your chance to be a rocket scientist! Investigate the four forces of flight as you race through space. Explore the science involved in rocket construction as you build and take home your own Mad Science® Skyblazer Rocket.

**SUMMARY:**
Children will follow a detailed construction plan to build their very own Mad Science® Skyblazer Rocket while exploring the science of rocketry. Children will play a fun game illustrating the four forces of flight. A model rocket launch will be part of the Space Travel class.

**EDUCATIONAL VALUE:**
Children are provided with a valuable hands-on experience as they build a Mad Science® Skyblazer Rocket. As they move through the various stages of construction, children learn the components of a rocket and the roles each play in a rocket's flight. Children will learn about the four forces affecting flight in lessons that will be reinforced with a fun game in which they race through space.

**TAKE-HOME MESSAGE:**
1. Rockets are vehicles used to transport objects and people into space.
2. The four forces of flight are lift, gravity, thrust, and drag.
3. Model rockets have the same key components as a full-size rocket.

**TAKE-HOME PRODUCT:**
Mad Science® Skyblazer Rocket ($8 extra per child)
Learn what it takes to be a true globetrotter! Race a 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 Mad Science® Space Copter to fly to the skies!

**SUMMARY:**
In Space Travel, children will launch their investigation of rocket propulsion using the compressed air inside balloons for thrust. The class will race balloon rockets and be challenged to devise a balloon-powered rocket car. Experimenting with the fast-moving air produced by spinning propellers, children will build a unique Mad Science® Space Copter to take home. For our grand finale, children will witness a thrilling model rocket launch, and learn the meticulous preparations necessary to send up a rocket!

**EDUCATIONAL VALUE:**
In this class, children will learn about the propulsion systems employed for space travel. Children will participate in inquiry-based discussions and multiple hands-on experiments designed to introduce them to the concepts of thrust, propulsion, action/reaction, aerodynamics, the stages of rocket flight, construction of a Mad Science® Space Copter and more!

**TAKE-HOME MESSAGE:**
1. The main parts of a rocket are the nose cone, rocket body, fins, engine, and parachute.
2. The rocket body carries the astronauts and other objects into space.
3. Each part of a rocket is essential to a successful and safe flight.

**TAKE-HOME PRODUCT:**
Mad Science® Space Copter
Discover technology that's out of this world! Steer a laser beam through a laser maze, and discover everyday objects originally designed for use in space! Take home a Mad Science® Stereoscopic Viewer and observe actual 3-D images from NASA's probe transmissions!

SUMMARY:
Space Technology starts with an exploration of space-related technologies used on Earth. Children will help laser light through a maze, use principles of radar technology to discover hidden objects, and discover the importance of points of reference to depth perception. Children examine the potential threats to spacecraft and see the technological advances that improve our exploration of the universe. Children go home with a Mad Science® Stereoscopic Viewer containing a set of stereoscopic images transmitted from probes and rovers in space.

EDUCATIONAL VALUE:
This after-school program introduces children to space-related technologies, including those used on Earth to aid space exploration and the very scientific principles of space travel. Engaging demonstrations and exciting hands-on activities, including a Mad Science® Stereoscopic Viewer, will make this investigation of Space Technology a fun learning experience.

TAKE-HOME MESSAGE:
1 laser light is concentrated light that travels in a single, straight line called a beam.
2 Radar bounces radio waves against an object to calculate how far away it is.
3 Space technologies perform tasks better when built with two camera eyes instead of one.

TAKE-HOME PRODUCT:
Mad Science® Stereoscopic Viewer
Experience the life of an astronaut as you suit up for space flight! Use teamwork to complete an important space mission and build a model space station. Bring home the challenge of repairing a ripped solar panel on the International Space Station with your very own Mad Science® Spacewalk Mission!

**SUMMARY:**
Children set out on a mission to experience life in space! Children will try out the special adaptations needed to live in space, learn about mission training techniques, and form a ground control to space mission team to repair a circuit in space. The children take part in a Mad Science® Spacewalk Mission that they can take home!

**EDUCATIONAL VALUE:**
This class puts children in the boots of an astronaut. Children explore the various demands and challenges facing astronauts in space and the Mission Control who support them from the ground. Children then investigate astronaut training, mobility, and life support, and experience astronaut life for themselves as they participate in a Mad Science® Spacewalk Mission.

**TAKE-HOME MESSAGE:**
1 Astronaut life is challenging and rewarding
2 Astronauts need air pressure around them to live in space.
3 Planets closer to the Sun are warmer than those farther away.

**TAKE-HOME PRODUCT:**
Mad Science® Spacewalk Mission
Charge up on electricity. Learn about static electricity and build circuits with stronger currents. Light up plasma balls and play fun games with conductivity. Use your Static Stick on electrons at home.

**SUMMARY:**
In this class, children get excited about electricity. Children use different objects to create a static field. They will test different objects for conductivity using fun lights and games. Students will work to master electrical circuits and build their own static stick to create electron movement at home!

**EDUCATIONAL VALUE:**
This workshop introduces the students to the fundamental concepts of electricity. Students, through hands-on activities, gain a better understanding of electrical circuits and the basic elements of electricity. This lesson provides an opportunity to develop scientific skills through inquiry based instructional methods.

**TAKE-HOME MESSAGE:**
1. Everything is made up of atoms and atoms are made up of neutrons, electrons and protons.
2. Electrons and protons like to be together.
3. Electricity we use every day always needs to flow in a loop and is always looking for the quickest route to the ground through materials called conductors.

**TAKE-HOME PRODUCT:**
Mad Science Static Stick